JAN 22 1957
B 633844

HITCHCOCK'S WOOD WORKING DIGEST

JANUARY 1957

In This Issue . . .

What's New and What's Needed In Woodworking?

Pianos and Plywood

Year Around Tax Thinking

Saw Blade Quiz

Sanding Sealer By Machine

Improved Wood Products

Edge Glued Redwood Cores

FEB 14 1957

TRANS-ERA by Craddock

THE NUMBER ONE PUBLICATION FOR THE ENTIRE WOODWORKING INDUSTRY

New . . . *for Plywood Moulding*

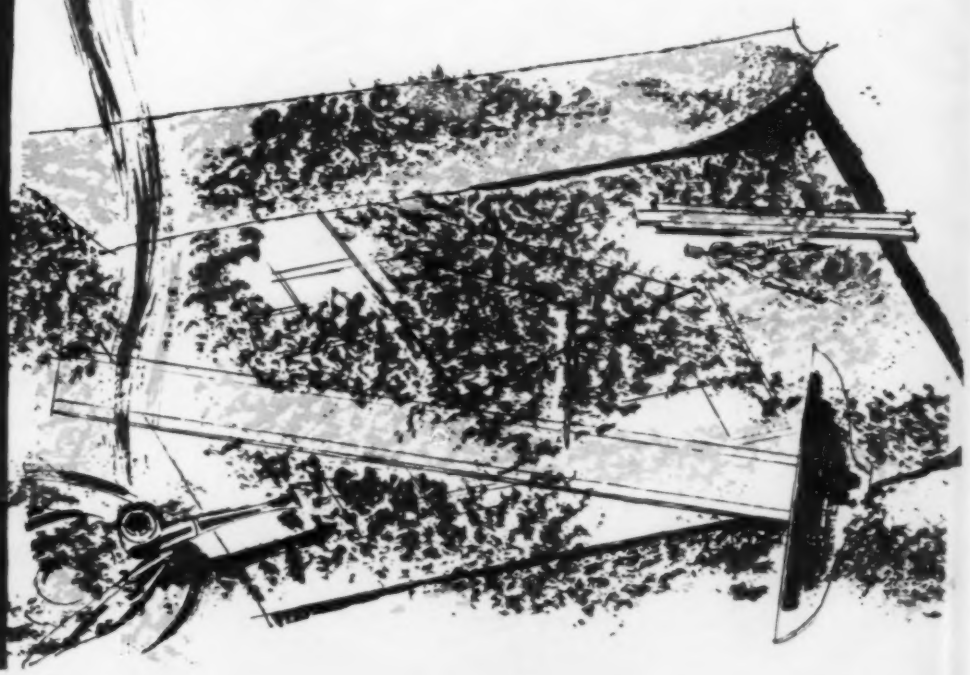
. . . an integrated, engineered combination of press and heating equipment for increased production at lower costs!

FOR THE FIRST TIME . . . now available as a complete, centrally controlled, push-button system . . . a **Berthelsen** Hydraulic Press, and a **Raybond** Dielectric Heating Generator. For the first time . . . an equipment package designed as an integrated unit, for maximum production and optimum efficiency in **ALL plywood molding applications!**

THIS UNBEATABLE COMBINATION means real savings in time, procurement and installation costs . . . PLUS . . . greater production, better quality and undivided responsibility for performance. Single press systems can be expanded to twin press-single generator operations by simply adding a second Berthelsen Press.

APPLICATIONS . . . practically unlimited—for such products as: serpentine drawer fronts . . . chair seats and backs . . . molded case ends . . . luggage cases . . . musical instruments . . . water skis—plus many other types of curved plywood products.

Write today . . . to either Raybond Electronics or Berthelsen Engineering for further details. Find out how this modern system can pay its own way—how it will fit your own particular problems.



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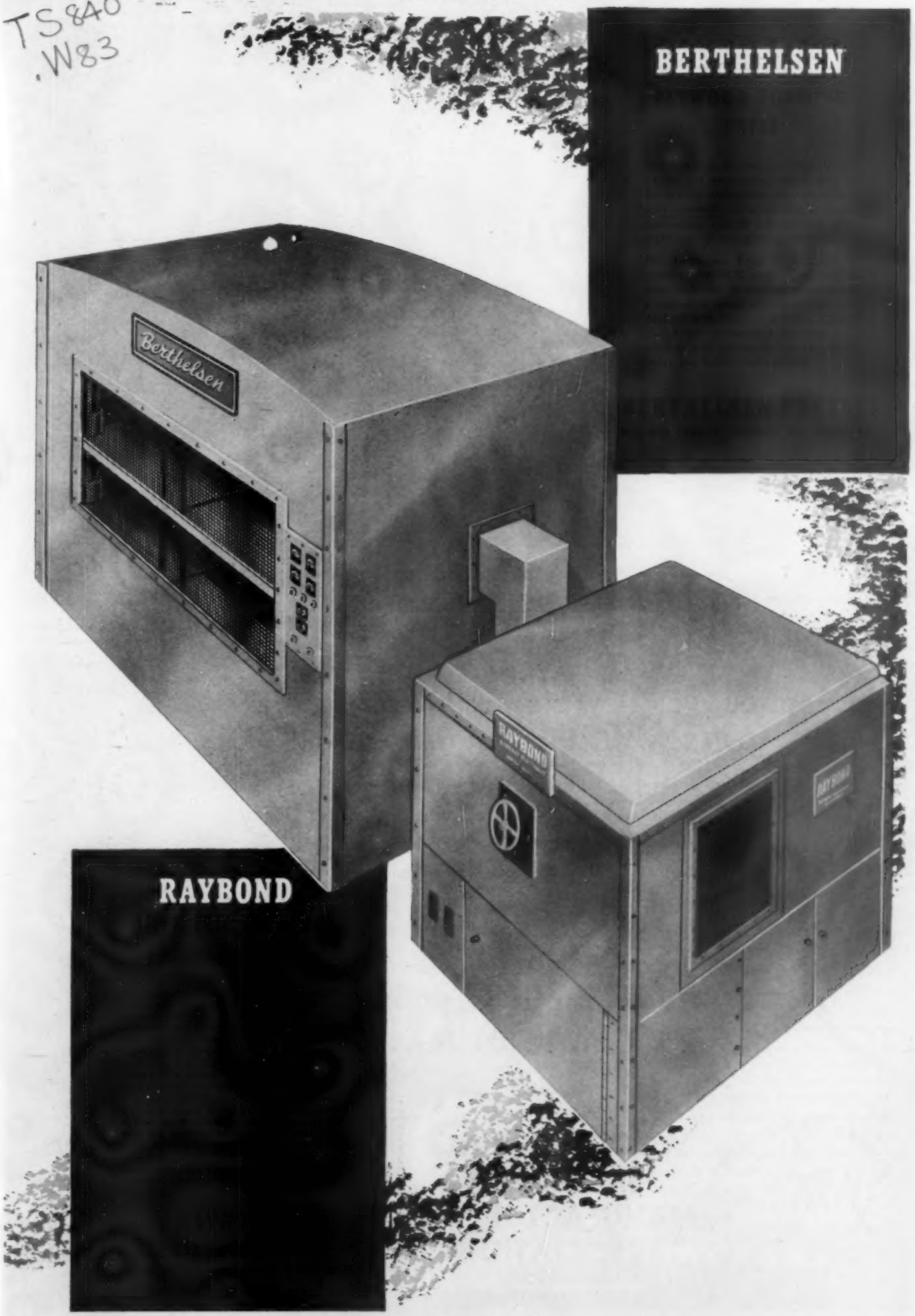
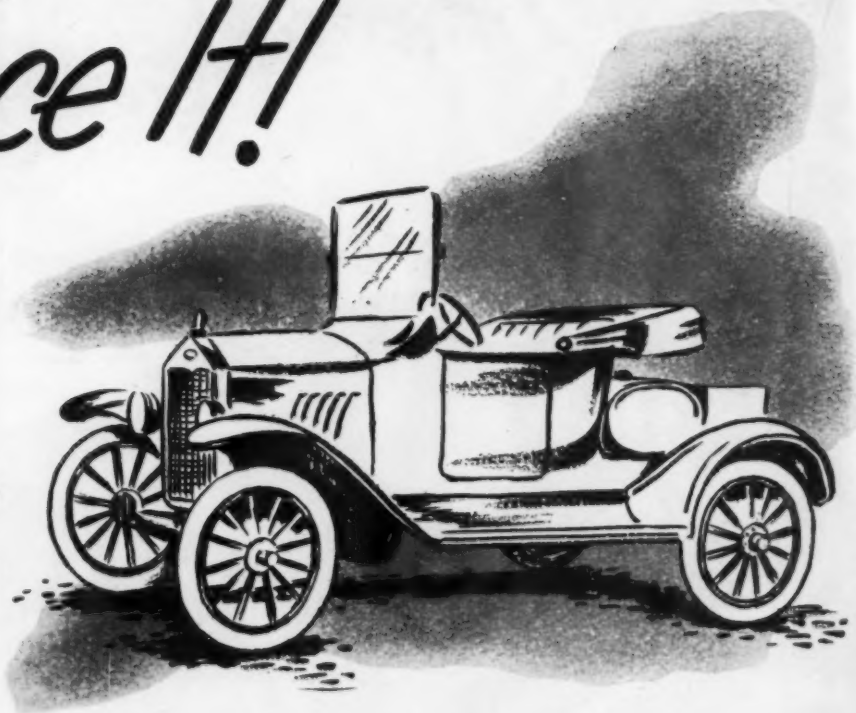


Let's Face It!



IT STILL RUNS ...BUT

you wouldn't depend on it for transportation today. Similarly, old woodworking machines can hardly be depended upon to produce *profitably* in today's competitive markets.

DO YOU *KNOW* HOW OLD YOUR MACHINES ARE?
DO YOU *KNOW* WHAT MODERN MACHINES WILL DO FOR YOU?

In this period of changing skills when more and more people come to you with high school and college educations, the emphasis is on mental rather than physical job requirements. Modern machines attract this better help . . . upgrade your labor force. Modern machines produce profitably for you. Get your machine replacement program moving. Start now and shift it into high gear today.

Put a profit in your woodworking with MODERN MACHINES

WOODWORKING MACHINERY MANUFACTURERS' ASSOCIATION — WMMA

WOODWORKING MACHINERY MANUFACTURERS ASSOCIATION
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PHILADELPHIA, PENNSYLVANIA

WOODWORKING MACHINERY MANUFACTURERS ASS'N.
1900 ARCH ST., PHILADELPHIA, PA.

Please send further information. I am interested in the following types of machinery_____

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Company_____

Address_____

City_____ Zone____ State_____

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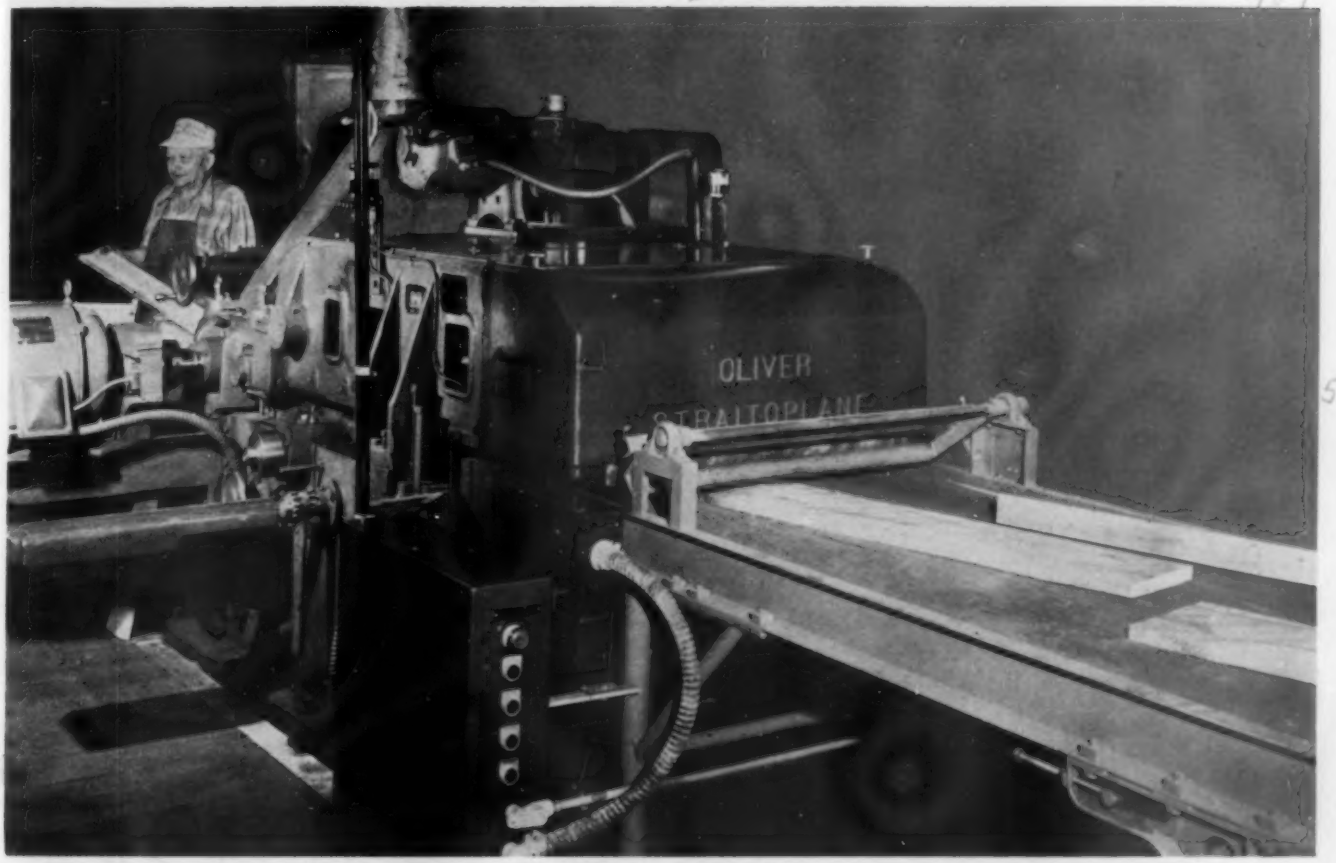
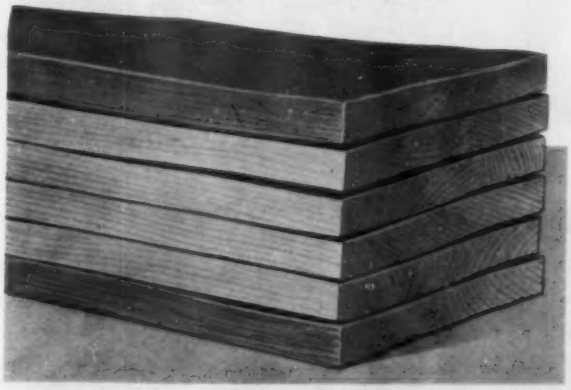


Straitoplane in operation in the plant of
The Baldwin Company, Cincinnati, Ohio.



Before and After Straitoplaning

In one pass

the Oliver STRAITOPLANE takes raw stock out-of-wind and planes both sides smooth and parallel

The efficiency of the Straitoplane is being proved daily on the floors of users. In one pass it does the work of a facing planer and a single surfacer . . . and does it better! It planes out as much as ¼-inch on each side at speeds up to 90 feet a minute. The bottom side is face jointed, and the top side planed smooth to the desired thickness. The finished stock is perfectly flat, and uniformly true.

The Straitoplane takes twisted stock of any length from 1 ½ to 36 inches wide, from ½ to 6 inches thick. It planes pieces as short as 16 inches when fed singly. Many narrow strips can be surfaced at one time. No other machine can match the production of the Straitoplane.

The Straitoplane is the indispensable unit of the Oliver Conveyorized Rough Mill layout now installed in many leading woodworking plants.

● **Write today for complete information on the modern Oliver Straitoplane for production plants . . . and the Oliver Conveyorized Rough Mill layout**

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SINCE 1890

OLIVER MACHINERY COMPANY
Grand Rapids 4, Michigan

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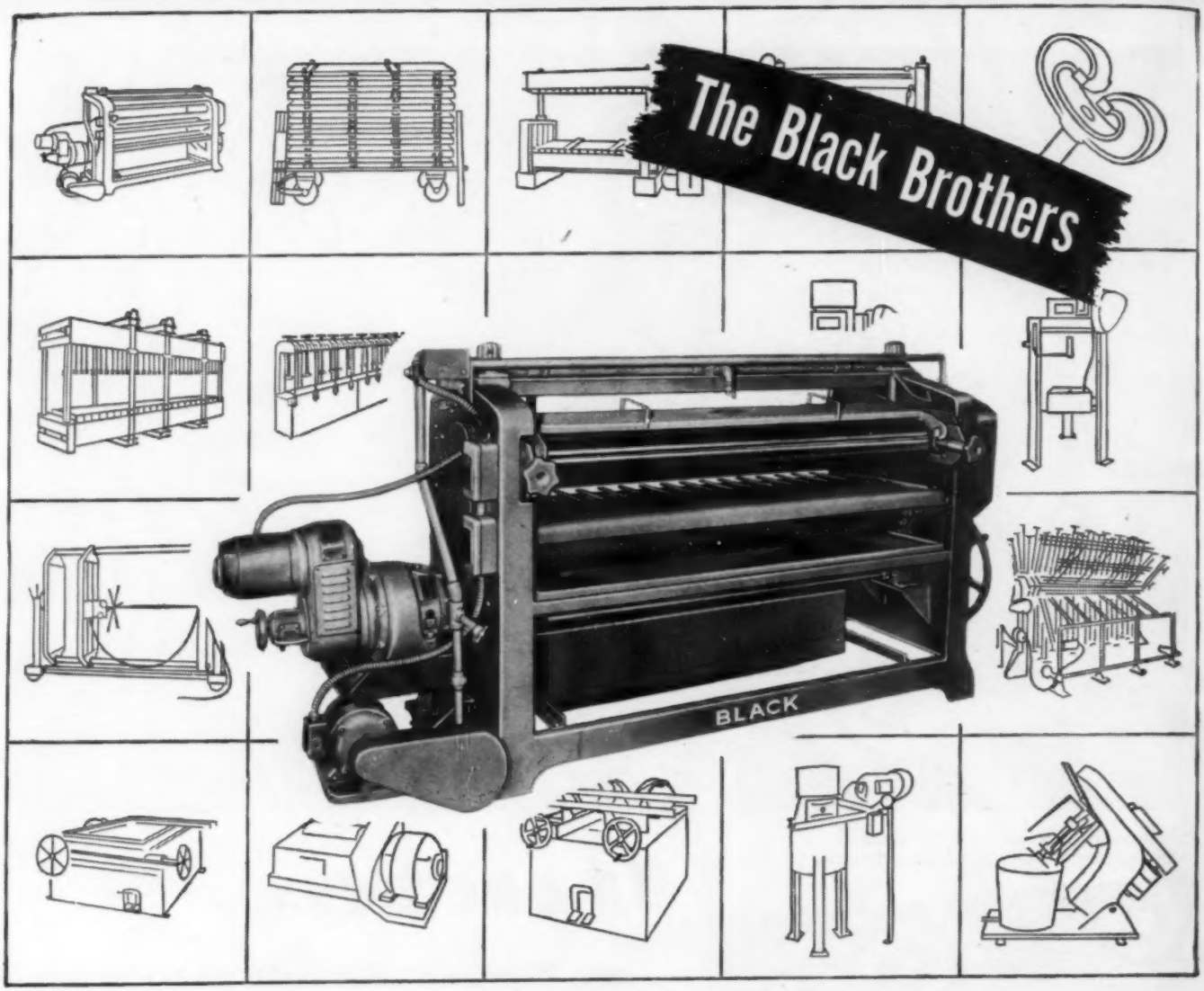

Resilient Roll, Ball Bearing Glue Spreader

The No. 22D Ball Bearing, Resilient Roll Spreader for resins, casein, and other cold glues is unmatched in speed, economy, accuracy, cleanliness and quality production. Gluing rolls are deeply covered with fine synthetic rubber, and are specially grooved to control the amount of resins deposited and to conform to irregularities in the veneer. Accurate, heavy duty ball bearings are sealed to keep lubricants in, and dirt and glue out. Doctor rolls are heavily *coated* with a highly polished, non-ferrous surface to accurately control the glue spread and eliminate corrosion. Investigate the No. 22D spreader . . . write for supplement to Bulletin 11-A.

"If It Is Gluing Equipment - We Have It"

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January '57

hitchcock's WOOD WORKING digest

Vol. 59 No. 1

Fifty-Nine Years of Service 8
About the Cover 12
Memo to Management 20
Pointed Paragraphs 23
Improved Wood Products 26
Around the Shop 33
Safe Operation of Circular Saws 36
What's New and What's Needed in Woodworking, *a three part article* 41
Pianos and Plywood 53
Edge Glued Redwood Cores 63
Sanding Sealer By Machine 69
Wood Favored for Cabinets 76
Available Literature 82
Men in the Industry 95
Equipment and Supplies 103
Indexes 124-125

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from Montreal to Miami—from Bangor to Burbank, usually in a matter of a few *hours*—rather than *weeks* or *months!* With Diehl machines in thousands of woodworking plants scattered all over the nation, qualified service representatives cover some 120,000 miles per year—*by air* . . . thus assuring fast, dependable service when it is needed *most!*

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for Diehl machines no matter when they were built! Diehl has made the finest precision woodworking equipment available since 1909, and can manufacture and *install* parts for any machine during its normal operating life.

Service

is a vital segment of Diehl's far-flung operations, and only Diehl offers such streamlined, dependable service to the woodworking industry! So when you next need a modern, profit-making woodworking machine, see your Exclusive Diehl Representative. He'll show you *dependable* Diehl machinery, backed by *dependable* Diehl service.

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Wabash, Indiana

Diehl

DIEHL *Service* STANDARD OF COMPARISON IN THE WOODWORKING INDUSTRY

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fifty-nine years of service

It was in October, 1898 . . .

That month, that year, Mr. A. H. Hitchcock published the first issue of Hitchcock's Lumber List, known today as Hitchcock's WOOD WORKING Digest. That 16-page leaflet was sent to all buyers of woodworking machinery. For nearly 60 years, our publication has served its readers with current, informative material, providing help in all phases of the industry. Here are a few milestones which mark our progress in service to our readers and our advertisers.

1939 We increased the size of the magazine to "digest" size—a larger and easier to read publication. In the next 10 years, we grew from 70 pages to 228 pages!

1948 "Hitchcock's WOOD WORKING DIRECTORY" made its appearance. At that time a special issue; now a separate biennial publication.

1955 Early articles on utilization of waste wood were published that year. Particle boards and hardboards are established materials today, but during the intervening years we offered you many authentic articles on the subject.

1957 Technical booklets were presented. Articles that we had published were presented in an easy reference form.
Changing to meet the needs of our industry, we now present this first issue in a new size with a new look inside and out.

Why this change in '57?

- This new size enables us to give you better editorial presentation with more and larger illustrations.
- To provide convenience in reading a major story within a comparatively few pages. (Previously, we often needed 12 or more pages.)
- To utilize the 7 x 10 size which today is more widely recognized than ever before as being standard size.

The size is new; the covers will sparkle with new colors—frequently four colors; and editorial make-up will be new. We shall, of course, be welcoming new advertising friends in the months ahead.

But . . .

- We shall still present articles on current subjects—airless spraying, particle boards, carbides, new machinery; and all of the yet unknown developments to come—stories that will interest you!
- Many friends of 25 years and more will continue to present their advertising messages.
- Complete coverage for all our friends will be continued. Our editorial policy to help our advertisers and readers in producing and merchandising their products will be as evident as heretofore.

Yes, Hitchcock's WOOD WORKING Digest, the "book of the industry," has a new 1957 look, completely redesigned to serve you in the best way possible. This is the "No. 1 publication for the Entire Woodworking Industry!"
Let us know your reactions to this first issue. We're hoping you'll like it and that it will serve you effectively and efficiently.

Sincerely,

Robert C. Van Kampen
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Executive Vice President

E. McDaniel
Editor

COMET "SENIOR"... ONE OF THE MOST POPULAR POWER SAWS IN THE WOODWORKING INDUSTRY

with Comet Radial Arm Saws

MEN WHO KNOW SAWS have sworn by COMET RETRACTABLE, radial arm saws for a quarter of a century. And for good reasons... rugged construction... power... capacity... accuracy... ease of operation... safety. The COMET'S ENTIRE WORKING UNIT MOVES BACK after the stroke so that you can see your work. A safety return spring pre-sets cut-off strokes and assists quick return of the blade. The big steel arm rolls through 8 permanently lubricated ball bearing rollers, COMPLETELY ENCLOSED AND PROTECTED FROM DUST. COMETS can take it year after year without repairs. There's a correctly engineered COMET tool for every job, from the amazing Quick-Set dado cutters up to automatic panel cutters which cross-cut or rip any panel material up to 2" thick. Check the list below and mail coupon for specific information about COMET COST-CUTTERS FOR YOUR BUSINESS.

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- ☐ Radial arm saws
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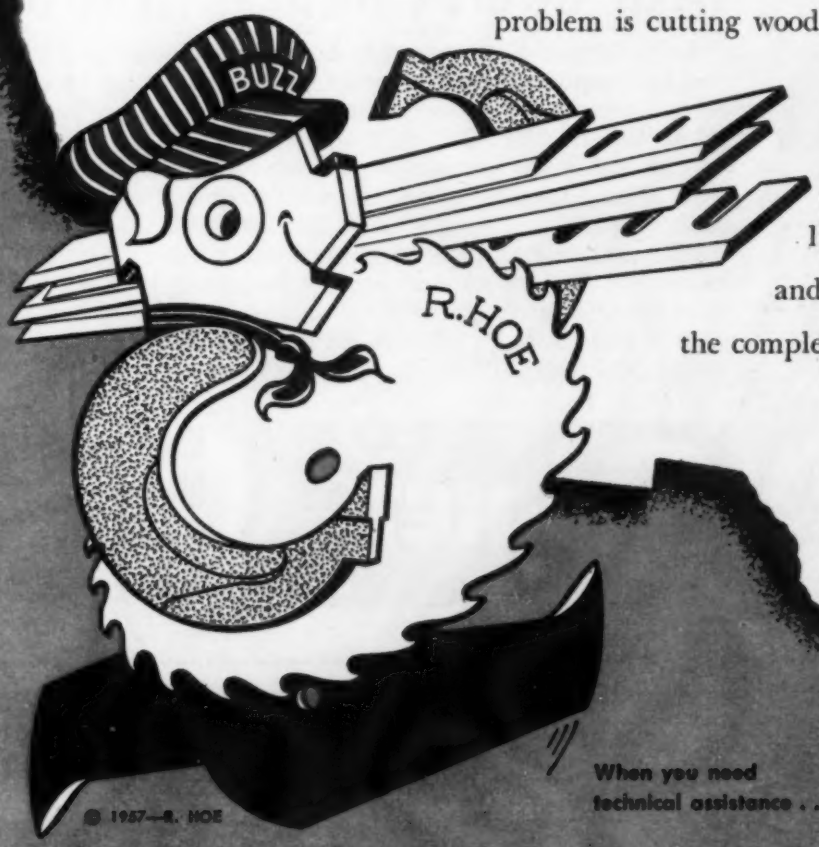
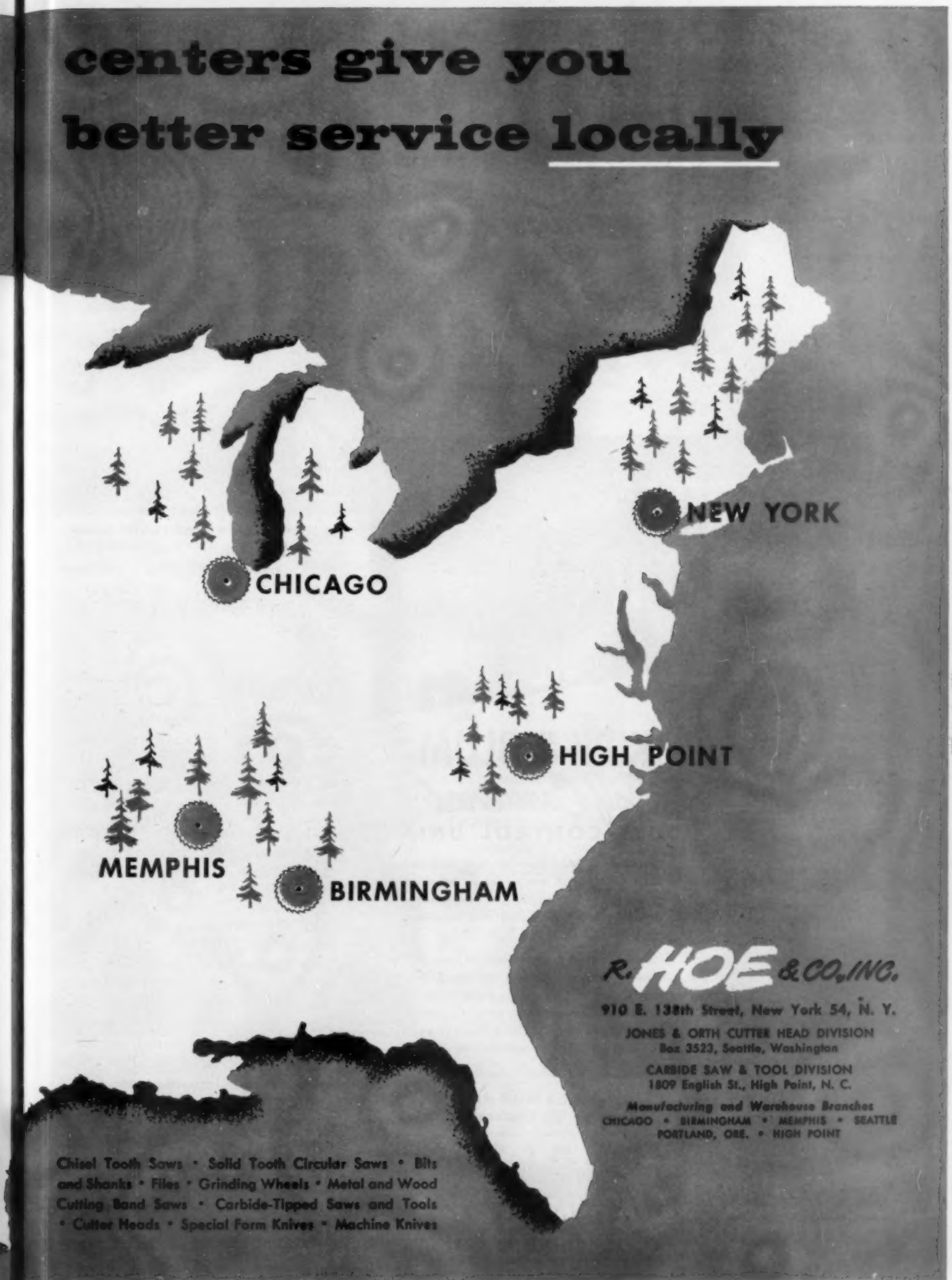
You can count on getting quick delivery of a Hoe saw or tool. Over a thousand Hoe distributors stock a representative line of Hoe products. And backing them up are Hoe's seven local service centers — all of which are amply stocked with Hoe's complete line including carbide-tipped saws and tools and Jones & Orth cutter heads. • Each center, too, is staffed by men who have had wide experience with different cutting and processing problems. They can give first-hand assistance whether your problem is cutting wood, composition or chip boards, plastics, or non-ferrous metals. • No other manufacturer can match Hoe's 128 years' experience with saws and cutting tools. For literature on the complete line of Hoe saws and tools, write to any Hoe division.



When you need technical assistance . . . "Buzz" Hoe

centers give you better service locally



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About the Cover

Featured on this month's cover is a room setting which illustrates Craddock Furniture Corporation's Trans-Era line of dining furniture. Trans-Era is an open stock line consisting of drop leaf and dining room tables, buffets, server, hutch, chinas, corner cupboards and chairs.

Trans-Era is manufactured from three different types of veneers and is available in three finishes to give Craddock's 5000 dealers the greatest possible combination of appeals.

It is made of Honduras mahogany veneers finished in "Summertan"; black walnut veneers in Patina finish and white rift oak in neutro finish. Lilly finishes are used exclusively. The three finishes were chosen to blend with the basic color schemes being used in modern construction.

Trans-Era was designed to have wide appeal to the homemaker. The space saving drop leaf tables take little room in today's smaller dining area. All cases have maximum storage, yet take little floor room.

From a construction standpoint, Craddock combines into each piece a feature to appeal to the ultimate consumer to make on-floor selling easier at the retail level. The five styles of drop leaf tables each have a different construction feature to whet the desire of the consumer. The self-storing leaf feature is available on one table. Craddock's exclusive, patented Solotop (no-split top construction) with hidden silver chest is available on a second model. Another has the pull-out pedestal feature that gives greater rigidity to drop leaf table construction. All tables feature the newest steel slide construction and Craddock's patented "Saf-lok" leaf supports that eliminate the danger of catching fingers in the knife hinges.

Cases, too, are designed with the consumer in mind. All doors and tops are 5-ply veneer, while drawer fronts are 7-ply. Craddock feels that the consumer wants "heavy" construction rather than false frames. All doors have magnetic catches while all drawers contain silver chests.

Bright brass hardware and sleek tapered brass legs or brass ferrules accent the pieces and correlate them.

Several years ago, Craddock Furniture Corporation, Evansville, Indiana, embarked on a modernization program to make itself one of the most efficient table and case plants in the country. All departments were conveyorized and force drying ovens were installed. New millroom equipment was added and a new power plant constructed which completely utilizes all sawdust. The program, though not completed, has increased production capacity by almost 50% while at the same time costs have been appreciably reduced.

• • •

PUT IT WHERE YOU WANT IT
KIRK & BLUM
Self Contained
DUST CONTROL UNIT
The Kirk & Blum Portable Self-Contained Dust Control Unit can be set up anywhere in the plant. The compact unit eliminates the need for long, costly pipe runs to isolated machines.
Entirely different and more efficient than smaller conventional units, the Kirk & Blum Self-Contained Unit is not a cheap fractional HP product designed to a price. It is, rather, an efficient product of Kirk & Blum's 50 years of experience in dust control.
Write today for detailed information.
THE KIRK & BLUM MFG. CO.
3121 Forrer St., Cincinnati 9, Ohio
Powered by 3 HP motor. Has air volume of 900 CFM at 2" suction with capacity for four 3", two 4" or one 6" pipe connection.
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DUST CONTROL SYSTEMS
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Laminated Construction Timbers BONDED BETTER with PENACOLITE® Resorcinol Adhesives

Spreading and lay-up scene in the construction of Commack arena arches.

Photograph courtesy of Unit Structures, Inc., Peshtigo, Wisconsin.

PENACOLITE-laminated arches like these are erected rapidly and economically. Moreover, the natural beauty of wood is preserved in the basic construction. Twelve of these giant arches were erected for the Commack, Long Island arena last summer.

Laminated structural timbers are receiving increasingly wide use in many kinds of building construction—schools, gymnasiums, public arenas and others. The laminated construction of these basic building supports makes them readily adaptable to requirements of size and shape. Furthermore, with their use, the difficult problem of finding single piece timbers large enough to meet specifications is completely eliminated.

Because of PENACOLITE adhesives' waterproof qualities and great bonding strength, they are specified for many important construction jobs. Bonds made with these specially formulated adhesives resist the shrinking and swelling of wood, and are unaffected by atmospheric humidity and temperature extremes. PENACOLITE adhesives set, even at room temperature, into bonds as strong as the woods they join. They are quickly applied and will not weaken with age or long exposure.

Investigate PENACOLITE Resorcinol Adhesives by sending for our free, illustrated booklet describing their many advantages and great variety of applications. Koppers Company, Inc., Dept. WD-17, Chemical Division, Pittsburgh 19, Pennsylvania.

KOPPERS

PENACOLITE® RESORCINOL ADHESIVES

The original waterproof room-temperature-setting adhesives

Sales Offices: PITTSBURGH · NEW YORK · BOSTON · PHILADELPHIA · ATLANTA · CHICAGO · DETROIT · HOUSTON · LOS ANGELES · SAN FRANCISCO

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SIMPLIFIES ASSEMBLY

AUTOMATIC DOWELLING
WOOD-LOK is applied with automatic glue gun for dowels on hard rock maple assembly. Joints are stronger than with any other type adhesive.

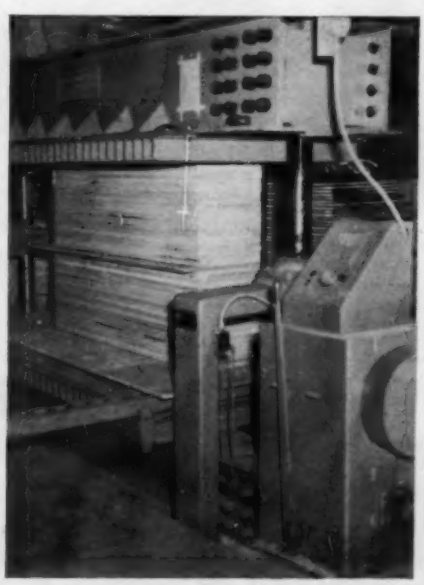
NO CHILLED JOINTS
WOOD-LOK allows 5-7 minutes open assembly time. This interval is more than enough for precision alignment in edge gluing extra long stock.

STRONGER GLUE BLOCKING
WOOD-LOK bonded blocks hold face frame to sides of cabinet. No nails or screws are used. Superior tensile strength of glue line insures durable construction.

SPEEDS LAMINATING

SIMPLIFIED GLUING
WOOD-LOK requires no mixing. It's virtually odorless. Nonirritating to skin. Lasts all day in the pot. Moreover, it cleans up readily with water.

NO I-BEAMS OR CLAMPS
WOOD-LOK needs only a 15-30 minute press. No I-Beams, clamps or curing rooms are necessary. Assembly time: up to 45 minutes without danger of precure.



FASTER MACHINING
WOOD-LOK laminated doors can be trimmed one hour after pressing. Glue line is practically nonabrasive. Saves cost of frequent blade resharpening.

WOOD-LOK® Does two jobs at Oxford Cabinet Co.

FROM THE ROUGH LOG TO FINAL FINISH—Oxford Cabinet Company, Oxford, Pa., harvests its own timber lands. Saws into lumber. Assembles. Does everything—in combining the beauty of Birch and Sound Knotty Pine with utility and compactness for today's streamlined kitchens.

Oxford's assembly work and laminating are faster. Stronger. Why? Because of the setting speed, strength and convenience of WOOD-LOK, National's cold run, ready-for-use resin glue.

WOOD-LOK may well modernize your operations, too. One of National's sales technicians will be glad to show you how. Just write. Or telephone your nearest National office.

RESYNS® National ADHESIVES

NATIONAL ADHESIVES • Woodworking Department WD (Resin Division), 270 Madison Ave., New York 16
3641 So. Washtenaw Ave., Chicago 32 • 735 Battery St., San Francisco 11 • 1511-23 So. Main St., High Point, N. C.

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Write the Editor if you are interested in contacting any of these readers.

"Please give me the names of companies who supply lumber for ladder manufacture in my area."

—S. A., St. Petersburg, Fla.

"I am trying to locate some manufacturers of air powered ram saws, or ram saws that could be adapted to air power. Could you advise me on this?"

—J. S., Minnesota

"We were delighted to get the clipping from your November issue. The charts on sanding were excellent. Thank you for sending them to me."

—J. C., New York

"We read your interesting article in the November issue covering plywood and molded boat setups. We would very much appreciate it if you could give us the name of the manufacturer of the boat shown on page 83."

—D. C., New York

"We would like some assistance on setting up cost figures for Ponderosa Pine cut stock. We have only two rips, 2¼" and 4¾" widths. Our lengths are 14", 18", *22", *26", 31", 34", *40", *43", *48" and *53". The ones marked* are by far the more popular sizes.

"Now, if we rip and cross cut to get the best yield for our lumber, by using 3 Shop we can come up with 1/3 waste assuming the lumber cost us $100.00 the set parts cost us $150.00 plus labor and overhead. This would be fine if we could use whatever sizes the cuttings yielded.

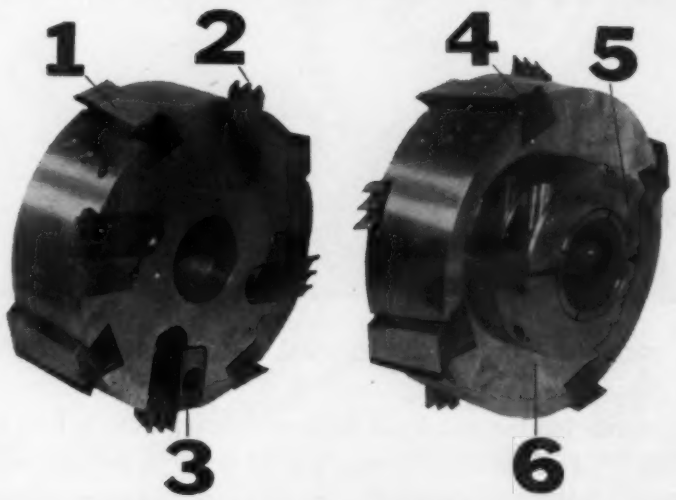
"The lengths marked with * are good property, we never have enough of them. However in order to get these sizes we always end up with a surplus of the other sizes (14", 18" and 31").

"We must therefore take our figure of $150.00 per MBF as a constant and figure the 14", 18" and 31" value at less than 100% of the constant. We must also figure the value of the popular cuts at over 100% of the constant to properly price our product. How do we go about finding the correct percentage?"

—B. C., Missouri

Do your tenoners give you trouble ?

Here's Marcoloy's New All-Carbide Tenon Head with Helical Knives!



SIX WAYS BETTER

1. Helical carbide knives for shear cut
2. Adjustable carbide spurs
3. Safety Lock
4. Safety Dovetail Knives
5. Self centering and clamping sleeve
6. Tool steel head (not cast)

These new Marcoloy All Carbide Tenoner Heads are real performers.

They'll cut your down time to nothing flat and do better work.

Investigate the Marcoloy Carbide System! Write for recommendation for your tenoner. Send for Marcoloy catalog!

MARCOLOY CARBIDES

MARCOLOY INC.
Springdale, Conn.

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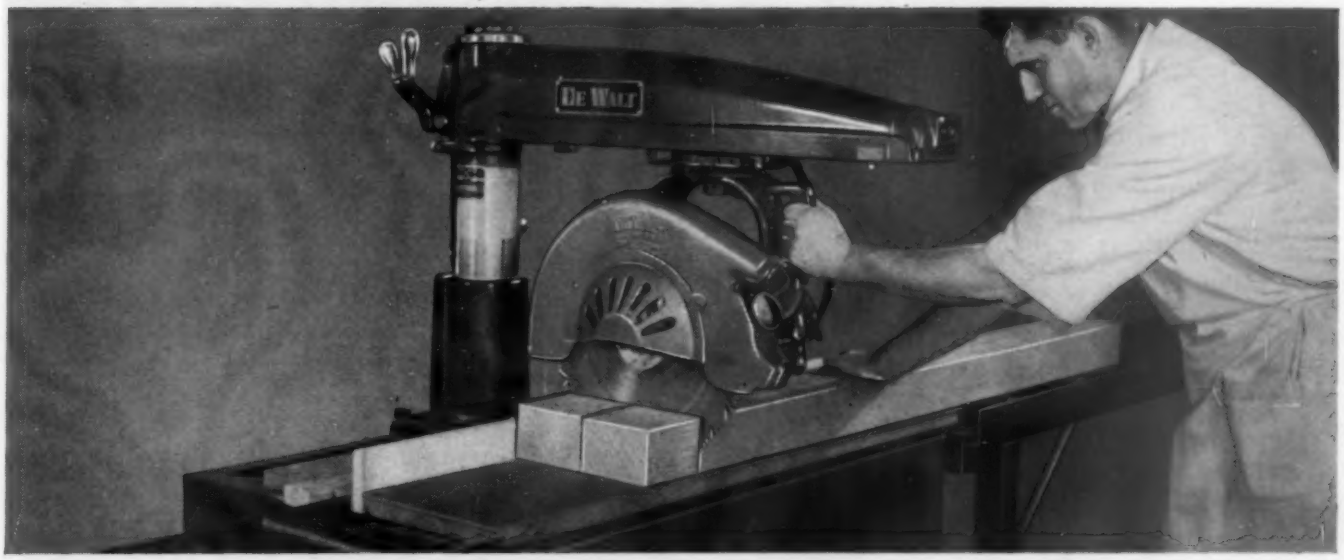

These De Walt job-tested methods

WILL SAVE YOU MONEY!

Send coupon for your booklet today. See how the famous AMF De Walt... the original overhead radial arm saw proved in industry for over 30 years... makes all cutting easier, faster, safer—*more profitable.*

Page after page of on-the-job photographs, job-tested methods, explanations, time-and-motion studies, showing...

- How to reduce capital equipment investment 60% or more!
- How to save 75% in floor space alone!
- How to make possible fast, efficient, straight-line materials handling for production-line cutting operations!
- How to give your operators unmatched job safety!
- How to make 17 different, popular saw and dado cuts... in less than 17 minutes!
- New and faster ways to make 17 *special* cuts!
- How to upgrade quality of work—*automatically!*
- And much, much more!

See why the AMF De Walt® is used in hundreds of thousands of cutting operations throughout industry... why an AMF De Walt for *your* cutting jobs is one of the smartest investments you can make.

Another AMF Product
DE WALT POWER TOOLS

De Walt Inc., Dept. WD-71 Lancaster, Pa., Subsidiary of AMERICAN MACHINE & FOUNDRY COMPANY
Please send me FREE IDEA BOOK for INDUSTRY.

Name_____
Title_____
Company_____
Address_____
City_____ Zone_____ State_____

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"We refer you to your *December 1956 Issue* and the article therein 'Finger Jointing . . . A Method of Conservation' by Carl Chekouras.

You refer to two types of finger jointing; the angle type and the conventional square finger joint. We would appreciate it if you would enlighten us on the relative advantages and respective uses, etc., of the two types. Which will bear the greater loads transversely and longitudinally? We are familiar with the conventional square finger joint but would like to learn more about both types you mention."

—R. E., New York

"We would appreciate your sending us the names of various specialty houses that will laminate all walnut, oak, and Korina plywoods in various thicknesses and sizes."

—P. S., Ohio

"As producers of dogwood and persimmon shuttle blocks and also hickory dimension stock, we find that we are able to secure considerable quantities of ski stock. In fact, for several years past, we have been exporting about four (4) cars of hickory ski blanks and during this time have come to know just what is required in the quality of the material for ski purposes.

"If you can give us information about finishing the blanks ourselves, it will be very much appreciated."

—D. N., South Carolina

"We are looking into the manufacture of hardwood pallets for the U.S. Navy. Two problems have presented themselves to us namely, what type of machines will it be necessary to purchase in order to chamfer the edges of the deck boards and to make cutouts in the stringers, 1⅛" high by 10½" long.

"Please advise the best method of machining these parts and most economical machines to purchase for this type of work."

—J. W., Virginia

"We plan to go into the manufacture of skis. Our group will be using Minnesota white ash. We are looking for a molder that can cut all four sides of a ski in no more than two passes. The patterns will have to be made to our specifications. They must be easily interchangeable and we want a rebuilt machine."

—S. W., Wisconsin

"Enjoy 'Letters to the Editor'. I am sure readers everywhere would be interested in reading 'Replies from Editor' pertaining to these same questions. The fact that these replies would appear in later issues would only make them more interesting from the standpoint of replies sent to the editor.

"Kindly insert under 'Letters to the Editor,' large company will lend assistance to any responsible person desiring to produce rough turned rock maple bowling pins—approximately 5½" diameter 17" long to be furnished green—sealed both ends to guard against checking."

—R. B., New York

"Please send us your WOOD WORKING DIGEST. We also would like to get special information for the production of wood chests, especially plywood chests."

—C. F., Hamburg, Germany

"I am trying to find the address of some manufacturers of ready-cut material for grandfather clocks. Can you help me? Incidentally, I have been receiving the WOOD WORKING DIGEST for 14 years. I value it for its information on machinery and methods. In fact, I have all of the back issues and refer to them often."

—A. S., Virginia

Write the Editor if you are interested in contacting any of these readers.

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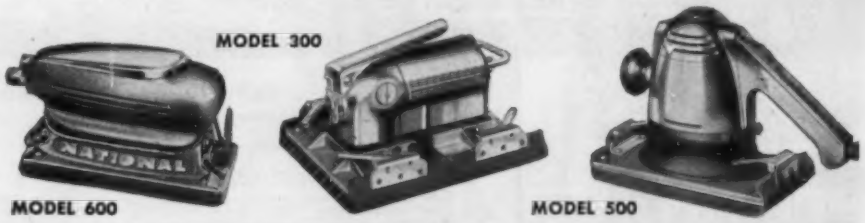
Proved Best in Actual Use...

NATIONAL NS SANDERS

MODEL 400

Over one hundred thousand Model 400 National Air Sanders are in use in industries throughout the nation. Their abilities to cut finishing costs, and still give a better sanding job is proven by their continued popularity. National makes a complete line of block sanders for the woodworking industry . . . electric or air driven with either orbital or straight-line action. Write today for a complete catalog.



NATIONAL AIR SANDER, INC., ROCKFORD, ILLINOIS

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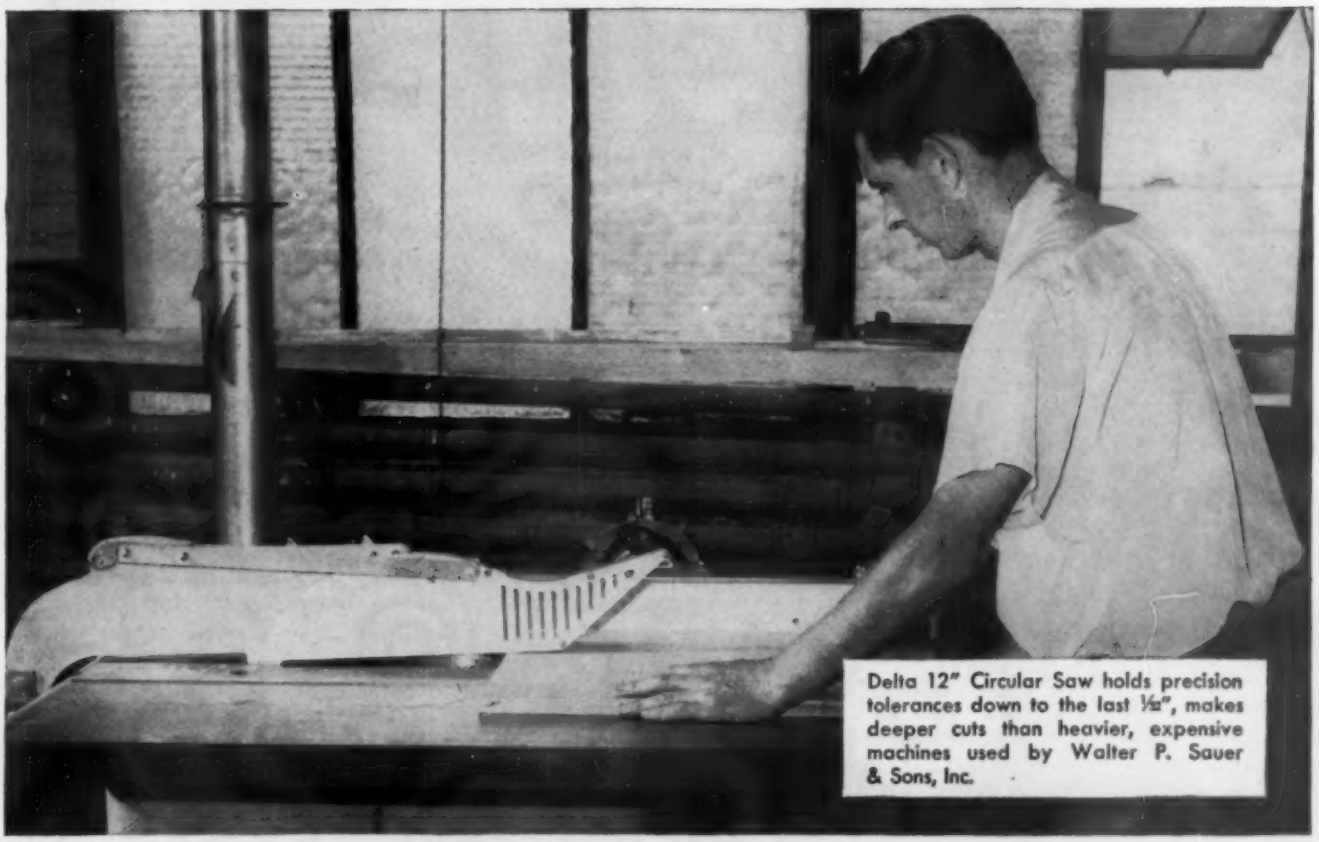
ROCKWELL-BUILT

DELTA 12" circular saws



Delta 12" Circular Saw holds precision tolerances down to the last ½", makes deeper cuts than heavier, expensive machines used by Walter P. Sauer & Sons, Inc.

... save cost of heavier, expensive machines

for Walter P. Sauer & Sons, Inc., Long Island City, N.Y.

QUALITY A MUST—"Producing fine custom furniture for the executive suites of leading Manhattan firms calls for precision quality," says Ted Sauer, Production Manager. "Customers demand top quality and our Delta saws meet these demands, turn out work to the highest standards of quality."

PRECISION AT LESS COST—"Our Delta saws not only give us the speed and precision we expect from much heavier machines, but at far less cost," says Mr. Sauer. And, according to Mr. Sauer, the Delta saws make deeper cuts than heavier machines they use.

NO MAINTENANCE—"We've never had any trouble with our Delta saws," says Mr. Sauer. "And they've been operating continuously, 8 hours a day, week-in and week-out for the past four years."

SEE THE ENTIRE DELTA CIRCULAR SAW LINE: 12", 10" Unisaw, 10" bench and 9" tilting arbor—plus the many other Delta woodworking tools. See them demonstrated, get all the facts—compare and make up your *own* mind! Your Delta Dealer is listed under "TOOLS" in the Yellow Pages of your phone book.

Send coupon for all the facts!

Delta Power Tool Division, Rockwell Manufacturing Co.
666A N. Lexington Ave., Pittsburgh 8, Pa.

☐ Please send complete catalog of Delta woodworking tools.
☐ Please send name of my nearest Delta Dealer.

Name_____ Title_____

Company_____

Address_____

City_____ County_____ State_____

DELTA ROCKWELL — another product by ROCKWELL

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to management

Outlook for 1957

A poll of leading economists indicates that:

- Our economy is prosperous, but money is tight, and interest rates are rising. The Federal Reserve System is commendably endeavoring to restrain inflationary trends, but runs the risk that too much credit restraint might turn the economy down.
- Russia can be counted upon for periodic frights.
- Wages are rising more rapidly than productivity.

However, it is also true that:

- Some phases of the economy that have been recessive seem now to be stabilized or turned upwards.
- Over-all business activity ended 1956 at new highs, and rising; unfilled orders are substantially above a year ago.
- Federal, state and local governments are spending increasing sums on defense, education, and other public projects.
- Personal incomes continue to rise, employment is excellent and people are saving more and spending more.

Predictions indicate that these favorable trends will continue and moderately improve in 1957. The new high levels of economic activity achieved in 1956 will carry things along for the first few months of 1957.

Small Business Administrator Wendell B. Barnes has predicted that 1957 earnings of small companies, before and after taxes, will continue the upward trend of the past two years. There will be, however, a rise in requests for agency loans as small business men are confronted with price squeezes and materials scarcities.

In the home building field, which strongly influences our woodworking industry, most builders are optimistic.

Report from the Department of Commerce says, "Outlays for new construction are expected to total almost 46 and one-half billion dollars in 1957, about 5% above the record volume of 1956. Because of the housing decline, private construction activity as a whole, is expected to show only a nominal increase, reaching a total of 31 billion dollars in 1957."

The over-all picture is good: trend in production and prices will be up, but to the great majority of people, the new year promises even greater prosperity.

Taxes and Finance

Congressional taxing committees are currently giving attention to excise and corporate tax extension. Leaders of Congress feel that the less time given to tax proposals the better it will be for scores of Congressmen who pledged support for tax reduction during their election campaigns.

There is a large measure of bi-partisan cooperation. Secretary of the Treasury Humphrey and Congress seem to see eye-to-eye on the fact that under the present conditions there should be no general tax cut until 1958.

There will be further attempts in 1957 to boost small business' share of government contracts. The problem of defense contracting will be tackled from several angles.

There is word also that Congress may help U.S. industry in giving more protection against imports.

Washington

The President and his cabinet are keeping before them the situation in eastern Europe, with disintegration of the Soviet satellite empire being followed closely. The U.S. aim has been well stated by Secretary of State Dulles, "America hopes to see a peaceful evolution toward genuine independence."

Wendell B. Barnes, administrator of the Small Business Administration, announced a new revised definition of "small business" for government procurement purposes. This permits some firms with fewer than 500 employees to be classified as large, while others with more than 500 employees may be classified as small. The definition became effective January 1.

It would seem that there is little disagreement between the President and the Democrats in Congress on the general foreign policy objectives. There are those who say that the Democrats will take pride in helping the President over-ride the isolationists.

Labor Secretary Mitchell looks for new records in employment, but warns of recent price increases. At the same time, A.F.L.–C.I.O. President George Meany said that the national economy needs to be buttressed with higher living standards and increased purchasing power.

Before there was a word for it — MOORE Was Selling AUTOMATION!

Here are a few of the progressive manufacturers installing Moore Lumber Handling Equipment within the past year:

MILLER MFG. CO.
Richmond, Va.

STERLING LBR. & SUPPLY CO.
Goodwater, Ala.

UNITED FURNITURE CORP.
Lexington, N. C.

COOK & CO.
Hazelhurst, Ga.

STANLEY CORP.
Stanley, Wis.

NATIONAL CASH REGISTER CO.
Dayton, Ohio

NORTHERN LUMBER CO.
Poland, N. Y.

LUTCHER & MOORE LBR. CO.
Orange, Texas

GLENN F. GALL LBR. CO.
Baltimore, Md.

LANHAM HDWD. FLG. CO.
Greensburg, Ky.

POLSTON HDWD. FLG. CO.
Lafayette, Tenn.

EMERSON MFG. CO.
Suncook, N. H.

BRICKWEDE BROTHERS, INC.
Marietta, Ohio

I. T. WILLIAMS & SONS
Carteret, N. J.

VIRGINIA OAK FLG. CO.
Pulaski, Va.

E. L. BRUCE CO.
Columbus, Miss.

PEERLESS FLOORING CO.
High Point, N. C.

R. T. JONES LBR. CO.
North Tonawanda, N. Y.

If you want to convert part of your lumber handling costs into profits, let us show how Moore Equipment can help you.

The installation featured above was installed by Camp Mfg. Co. (now Union Bag-Camp Paper Corp.), Franklin, Va., over five years ago, and does the work formerly handled by 15 men. Similar equipment in operation at other mills for many years.

This kiln load was
STACKED on a MOORE STACKER
MOVED on MOORE TRANSFER CARS
SEASONED in MOORE KILNS
and (shown above) is being
UNSTACKED on a MOORE UNSTACKER

High-cost BOARD-AT-A-TIME handling is obsolete!

To close that wide and costly gap between the sawmill and the planing mill, let MOORE design a cost-saving lumber handling-drying system for your mill—whether small, medium or large.

This equipment is rolling back costs and piling up profits for other wood-working plants—it can save money for you. Write, wire or phone today for information.

MOORE DRY KILN COMPANY

Oldest and Largest Manufacturers of Dry Kilns and Veneer Dryers

JACKSONVILLE, FLORIDA · BRAMPTON, ONT., CANADA · VANCOUVER, B. C., CANADA · NORTH PORTLAND, OREGON

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Production

A government survey, "Characteristics of New Housing," has been released by the Bureau of Labor Statistics. Hardwood plywood emerges dominant in doors and kitchen cabinets. The survey reports that 88% of the homes have wood kitchens. Wood flush doors are used in 69% of the homes.

The home building industry provided approximately 1,100,000 new homes during 1956–the eighth consecutive year in which the industry has topped the million mark.

Sale of mobile homes during 1956 is reported to have reached 120,000 units. This is an increase of 13% over 1955 and sets an all-time record.

Furniture output and sales during 1956 broke all records. Nationally, furniture shipments were up 10% over 1955.

The TV industry wound up one of its four best sales years. Seven million black and white sets were sold in 1956. This year's volume is expected to equal that amount.

Research

A device called the "Stub-meter" to enable nondestructive evaluation of structural adhesive bonds by ultrasonic technique is under development for the air force.

The Small Business Administration has issued its January number of "Products and Processes." This circular, issued monthly, is designed to provide small business firms with additional sources for information on the availability of needed products and processes. It lists a number of inventions and patents which may be licensed to use in manufacturing.

University of Michigan has a new "Furniture Technology and Management" curriculum. It is designed to help the manufacturers who are suffering from serious shortage of trained technical administrative and production personnel. The Michigan program will be more specialized than heretofore and will offer courses in plant layout, material handling, motion and time study, production control, wage incentives and job evaluation.

Design swiping–which exists though seldom admitted–will be further protected. The National Council of Patent Law Associations believes it has ironed out most of the wrinkles in a proposed legislative bill to be ready for Congress in the next several months. Protection will be patterned after the copyright theory, instead of patent laws, unfair competition or interstate commerce. It will be based on originality of styling and utilize traditional remedies and recourse for infringement of copyright, such as injunctions and awarding of damages. Furniture Manufacturers Association of Grand Rapids is one of the principal proponents in the fight to plug up design plagiarism in the field.

Coming Events

January 20-24..Chicago Annual Convention of National Association of Home Builders.
January 20-24..Chicago, Winter meeting of the National Institute of Wood Kitchen Cabinet Manufacturers.
January 21-25..New York Winter Market.
January 21-25..Seattle Winter Market.
January 21-31..High Point Winter Market.
January 27-29..National Wooden Pallet Manufacturers Association, Hollywood, Florida.
January 28-31..Cleveland, Plant Maintenance & Engineering Show.
Jan. 31-Feb. 1.Boca Raton, Fla., National Wooden Box Association.
February 14-15.Washington, D.C., Annual Meeting of Hardwood Plywood Institute.
March 21-22...Chicago, National Association of Store Fixture Manufacturers.
April 8-10 ....New Orleans, Southern Pine Association Convention.
Apr. 29-May 3.Philadelphia, Materials Handling Exposition.

Procurement

Prospective bidders may obtain complete bid sets by writing to purchase office which is listed with each item. Identify the bid invitation by including all of the information given in the listing.

FURNITURE, wood for living room and bedroom, Colonial Mfg. Co., or equal–167 ea–IFB 220-4173-57-P3-B Bid open 12/28/56. Officer in Charge, Navy Purchasing Office, 180 New Montgomery St., San Francisco, California.

FURNITURE, dining room, wood, Landstrom Furniture or equal–304 ea; IFB 220-4170-57-P3-B–Bid Open 12/28/56 Officer in charge, Navy Purchasing Office, 180 New Montgomery St., San Francisco, California.

LUMBER, softwood, construction grade Douglas Fir, 1A, 4 inches x 6 inches x R/L, min 12 ft, 92700 bd ft–1B 4 inches x R/L–min 10 ft, 2781000 bd ft–IC 2 inches x 6 inches x R/L–min 12 ft, 370800 bd ft–1D 2 inches x 4 inches x R/L–min 10 ft, 370800 bd ft–1E 1 inch x R/W x R/L min 8 ft, 741600 bd ft. IFB FNW-2Z-7127— Bid open 1/14/57 General Services Administration, Business Service Center, Region 3, 7th & D Sts., S. W., Washington 25, D.C.

PLYWOOD, interior, sound one side solid on one side, sanded two sides, Douglas Fir or equal, size 36 inches x 72 inches sheet, 2600 sheet IFB FNW-2z-7127-N Bid open 1/14/57. General Services Administration, Business Service Center, Region 3, 7th & D Sts., S. W., Washington 25, D.C.

LUMBER, Softwood No. 2 Com. A/D or K/D to 19% M. C. Plywood Grade C-D, Grade A-D; Hdwd., Maple, K/D to 19% M. C.; Fed Specs, MM-L-751-C, MM-L-736; NN-P-530–Various Quantities, IFB 04-604-57-42 Bid open 12/20/56. Procurement office, Castle Air Force Base California.

Here are some interesting answers to a quiz used in a survey by the Pittsburgh Home Builders' Association: (1) Did wood paneling increase your interest in buying this home? 85% said yes. (2) Do you still like wood paneling after living with it for two years? 50% said yes; and 25% said their appreciation for it had increased. (3) Why do you like wood paneling? 75% said easy maintenance; 50% said beauty and appearance; 33% said economy.

We shall be interested in having our readers' reactions to this new size. Why not drop the editor a line giving us your comments?

Suggestion comes to furniture manufacturers not to camouflage the grain of wood surfaces. Most furniture buyers prefer finishes with easily visible grains. Natural woods are in vogue because they blend well with any decorative background of furniture style.

Predictions for the January Chicago Market indicate that there will be a near record attendance of 45,000 buyers and sellers. The Market will run from January 7-18. February issue of WOOD WORKING DIGEST will bring a complete report and illustrate many of the new showings.

We are calling your attention to the full page advertisement by Chester B. Stem, Inc., which appears in this issue. This firm, manufacturers of veneer and lumber, plans to use photographs of standing trees in their advertising messages. In many instances photographs of these species have not heretofore been reproduced. To arrange for these pictures to be taken, largely in jungle conditions, was a considerable undertaking.

Home buyers can count on seeing more wood in the houses built during 1957. This will be due in part to architectural designs providing for increased exposure of structural lumber. Also responsible

Save Time
Save Money
use
DUO-FAST
automatic
TACKERS

DUO-FAST AIR TACKERS cut production costs on case backs, drawer guides, and numerous other jobs.

MORE WORK, in less time, using fewer workers—that's the story on Duo-Fast Automatic Tackers and Staplers.

WIDELY USED in cabinet and woodwork shops, furniture plants, sash and millwork factories, toy makers, for a wide variety of fastening jobs.

A COMPLETE LINE of AIR TACKERS, HAMMER TACKERS, GUN TACKERS, STRIKE TACKERS, and AIR STAPLERS, including the model to save you time and money.

DUO-FAST GUARANTEE assures you of free service on Duo-Fast machines. An important money-saving feature.

DUO-FAST HAMMER TACKERS speed and simplify many tacking jobs. One-hand operation.

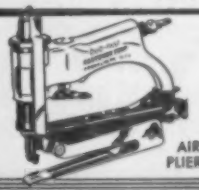
50 Sales & Service Offices in Principal Cities

WRITE TODAY FOR YOUR COPY OF THE DUO-FAST CATALOG & PROFITABLE SUGGESTIONS

The *right* machine for each job is important. You'll find the *right* one in the DUO-FAST LINE

STAPLE GUNS

STRIKE TACKERS


AIR PLIERS

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will be greater use of wood for paneling, siding, windows, kitchen cabinets and flooring. Lumber was used structurally in the exterior walls of 83% of this year's new single-family houses. This compares with 77% used a year earlier.

Inauguration stands near the White House were to be built of wood again in 1957. District of Columbia officials turned down proposals that steel stands be erected in the White House area. The reason: cost. Much of the cost of the wooden stands will be recovered by resale of the lumber.

Recent excavations in Egypt uncovered in the tomb of one of the first Pharoahs a wooden floor 5,000 years old. The floor was reported to be in excellent condition, as were several wooden beams used to support the roof of the crypt.

Chipboard continues to be popular abroad and at home. A new plant at Rydobruk, Sweden, will go into production this spring. Watch future issues of WOOD WORKING DIGEST for reports on some remarkable developments abroad.

A gift of $5,000 has established a Bemis Memorial Forest Products Library at the laboratory of Timber Engineering Company. James R. Bemis, president of Ozan Lumber Co. and John Bemis Veach, president of Bemis Hardwood Lumber Co., are the co-founders. The library is a memorial to six members of the Bemis family, which is in its 100th year in the lumber industry.

A course for finishers is being offered by the Finishine School for Finishers at Syracuse, New York, on January 14-16. Complete information is available from Finishine Laboratories, 627 Tallman St., Syracuse 4, N.Y.

Dr. John M. Yavorsky has resigned his position as associate professor of forest utilization at the State College of Forestry and has left to assume his new work in Rome, Italy. His new title is Chief of the Forest Utilization Section of the Forestry Division, Food and Agriculture Organization of the United Nations. He will assist in the implementing of FAO's international program in forest utilization through technical conferences on how to bring about better utilization of forest products.

A "progress report" to prospective members of the National Institute of Wood Kitchen Cabinets will be a highlight of the winter meeting of the organization, January 20 and 21. A complete story of this organization and its purpose is found in this issue of WOOD WORKING DIGEST.

Through its steady, consistent improvement, prefabricated housing is becoming an increasingly greater challenge to all builders. A survey indicates that more than 75% of prefab manufacturers now retain registered architects to design their houses. This design improvement trend means not only that prefabs will be better to live in and better to look at, but it also means that those who compete with prefabs will be forced to turn out a better product. Read our contributing editor's report on the A.S.M.E. meeting to see further developments in the prefab field.

Word from representative leaders of the Chicago, Grand Rapids, High Point and New York Markets indicate that there will be a continued high level of business. Design and styling will be important points as retailers compete with one another for a share in the 1957 business.

THE CHAIN MORTISER WITH GLIDING ACTION
PRICED WITHIN EASY REACH OF EVERY PLANT OR SHOP
Powermatic #15 Chain Saw Mortiser
APPROVED FOR HIGH PRODUCTION
Precision mortising takes on new meaning with the Powermatic Model 15! Designed and built to follow production requirements up, up, UP! Backed by a quarter-century of woodworking "know-how".
• REINFORCED CAST IRON COLUMN AND BASE
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• SUCTION FAN KEEPS WORK CHIP-FREE
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THE POWERMATIC LINE
MORTISERS • PLANERS
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Rush full information on the Powermatic
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The Maple Flooring Manufacturers Association has adopted new grade names which will become effective January, 1957. These are: selected first grade light northern hard maple; selected first grade amber northern hard maple; and selected first grade red.

An entirely new area in low-cost construction has been opened up by sturdy stressed-skin panels built with sheets of fir plywood glued to framing members. The panels give an unusual combination of strength, size and savings, because they span distances up to 20′ without conventional framing and can bear weights up to five times over the maximum design load.

Be sure to read the three-part feature in this issue—"What's New and What's Needed in Woodworking Machinery?" Then let us hear from you as to what you believe the answer may be to this question.

The French have now come up with an automatic control of automation! The Center of Scientific, Industrial and Maritime Research at Marseilles has developed a tape recorder control system to operate the machine tools in automation. While the employee operates a machine tool, rotary switches connected to the handles produce musical signals which are recorded on tape. When played back, these signals activate phonic wheels at nine slow-rotation poles, and by powerful mechanical coupling the machine may then be operated automatically. This form of automation is best adapted for small, mass produced items.

How many products are made from, or use, wood? Timber Engineering Company reports that there are 5,159 items.

More than half of the one and a half billion dollar 1955 sales of household furniture to furniture and department stores by U. S. furniture manufacturers was concentrated in eight leading states, according to a new and improved 1956 N.A.F.M. Sales Planning Guide published recently by the National Association of Furniture Manufacturers. The total was split 84% ($1,305,015,000) for furniture stores and 16% ($240,324,000) for department stores or a total of $1,545,339,000, according to the new statistics.

A fully collapsible hardwood plywood shipping container, whose sides are flexibly prejoined to permit speedier assembly, has been developed. The container can be stored flat, but opens up into a square tube when ready for use. Closure is completed by nails or staples through the top and bottom of the container.

A new thermo activated catalyzed synthetic finish for wood, having the quick drying qualities of lacquer and the high build solid of enamel is now being manufactured.

Homestyle Center is a project being initiated by the Home Research Foundation. It will be located on a 60-acre site at Grand Rapids, Mich., for the display of outstanding architectural designs in American homes—50 homes, completely furnished, are to be on display and will be open to the public at all times.

YOUR GUIDE TO *Better* ADHESIVES . . .

The Perkins Trade Mark is your guarantee of quality and reliability when you purchase glues. Since 1899, customer-confidence in Perkins has grown steadily—a deserved tribute to superior products backed by competent service and rigid ethical standards. When you use a Perkins Glue in your operations, you'll agree with other leading woodworkers—*that Perkins serves you best!*

GLUING PROBLEMS?

Dispose of them by calling upon the skilled assistance of the Perkins Technical Service Department. Specialists in gluing methods will study your particular operations and offer suggestions where pertinent. There is no cost or obligation involved in your use of this unbiased advice.

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P PERKINS GLUES

RESIN—Hot Press and Cold Press • Liquid or Powder Type
CASEIN—A broad line to meet your specific requirement
VEGETABLE—As originated and perfected by Perkins Glue Co.
ANIMAL—Ready-to-use Liquid • Heat-then-use Gel

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VENEER AND CORE REPAIR COMPOUNDS • VENEER SIZE
GLUE ROOM SPECIALTIES • MIXERS • SPREADERS • BRUSHES

RESIN CASEIN PERKINS VEGETABLE GLUES

ESTABLISHED 1899

LANSDALE, PA. KITCHENER, ONT.

IMPROVED WOOD PRODUCTS WITH THREADED NAILS

By E. George Stern

Research Professor, Department of Wood Construction
Virginia Polytechnic Institute, Blacksburg, Virginia

For centuries, more products have been assembled with wood than with any other material available to us. Experience and advances in technology have taught us how to make these wood assemblies better and more economical than was feasible years ago. Today, we take for granted the almost unbelievable production rates at which these improved wood assemblies can be turned out. Any further improvements in wood assemblies, to be of economical significance, will have to keep in tune with such mass-production procedures.

Many improvements will be based on design, others on advances in technology. The introduction and the widespread use of synthetic resin glues for the assembly of wood products were recent outstanding stepping stones in the technological advance in the assembly of wood products. The mass production of properly threaded, improved nails by progressive nail manufacturers and their introduction for universal use may be an equally outstanding, significant achievement.

In many cases, the lasting over-all performance of wood assemblies is the significant criterion for their success under all service conditions encountered. To mention just a few examples: a wobbly chair will be quickly discarded; a bed with a loose bed rail or a drawer with a loose guide rail cannot be a success for any length of time; a cedar chest with a corner joint which has opened partially is no longer a tight storage box; a boat leaking because of open joints is a menace to life and soul; a leaking cooling tower or vat can result in considerable economical losses; the damaged joint of a wooden crate or box can cause total loss of the crated and boxed items.

Thus, it seems obvious that the effectiveness of wood assemblies depends, in most cases, on the lasting effectiveness of their joints. Good materials for and proper workmanship in the assembly of wood products are generally accepted to be symbolic of good wood products which perform well and are not of the expendable type. The outstanding effectiveness of improved fasteners can often result in outstanding strength and rigidity of assembled wood products and, thus, in their superior performance and in economic benefits to all concerned.

This superior performance of wood products which are properly assembled with improved nails is, to a considerable extent, based on (1) refinements in nail design and (2) material and (3) manufacturing procedures employed in nail production.

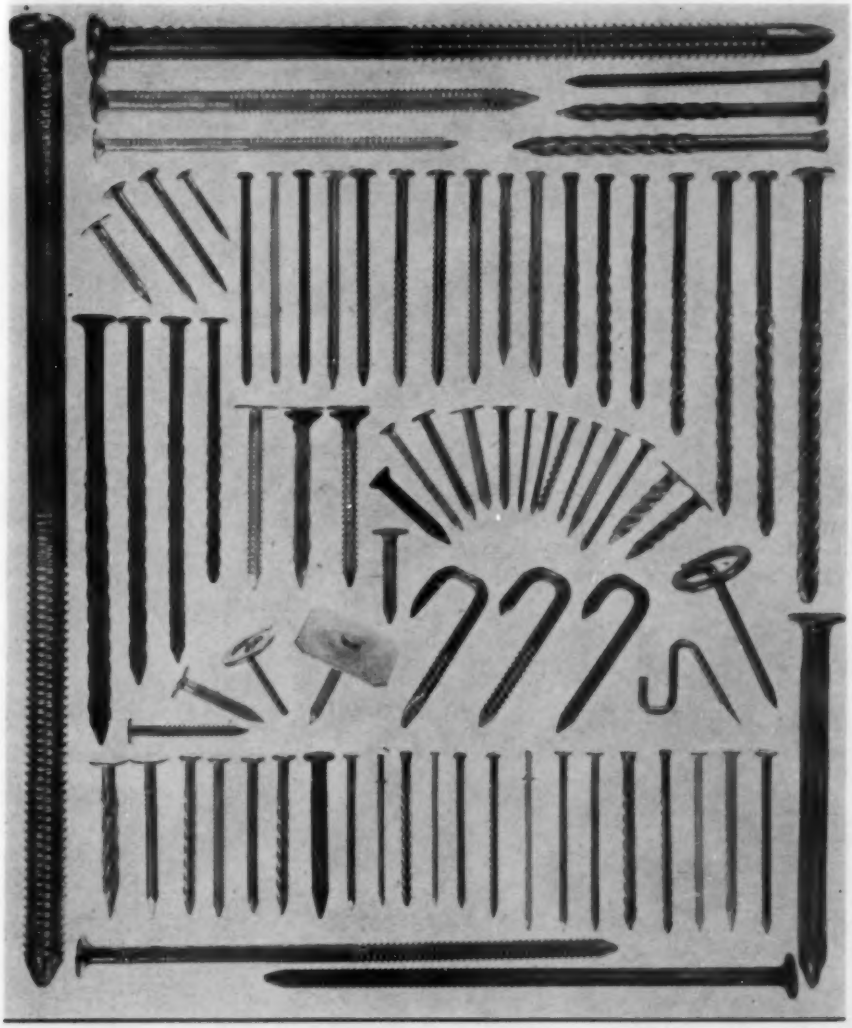
With respect to nail design, the introduction of particularly effective threads along the nail shank has resulted in maximum performance improvement.

Nails with helical threads of medium-lead angle turn during driving and form grooves in the wood. Wherever increased nail-holding power combined with maximum lateral load-carrying capacity of the nail and rigidity of the assembly are of importance, this is the nail to be used. If, for instance, driven into or through dense hardwoods, such as sugar maple, birch or hickory, this nail provides maximum effectiveness.

When maximum nail-holding power in soft hardwoods and light softwoods is a criterion, as in fastening to furniture cores, a nail with annular threads and double-ring shoulders is the most desirable nail. During driving, the wood fibers slide over these shoulders into the annular grooves like wedges to be released only when the wood is destroyed.

Where maximum nail-withdrawal resistance and increased lateral load-carrying capacity are required, the use of a nail with helical threads of short-lead angle is suggested. This nail combines the wedging features of the annularly threaded nail with the uniform cross-section along the nail shank as found with helical threads of medium-lead angle, thus, offers certain advantages inherent to both types of nails.

Where ease in drivability is more important to the nail user than effectiveness in holding power, helically fluted nails or "file-thread" nails are sometimes selected under the guise of threaded nails. Such fluted nails do not always provide better holding power than plain-shank common-wire nails.



During 1956, it is estimated that more than 50 million pounds, or 1250 railroad cars, of threaded nails were used.

Twisted nails also offer effectiveness under some conditions, but it is somewhat limited. Their threads are necessarily of a simple and not of a fish-hook-like design, as is the case with properly threaded "one-way" nails. Furthermore, their shanks are twisted all the way from head to point, which does not allow any final pulling together of the parts being nailed together. Heads on these nails are not uniformly round, which prevent the use of twisted nails with certain nailing machines.

While common-wire nails, box nails, sinkers, and coolers usually are of low-carbon-steel, threaded nails are available in both low-carbon steel and bright or hardened high-carbon steel. While the bright high-carbon-steel nails, so-called "stiff-stock" nails, are more easily driven into hardwoods than low-carbon-steel nails, the heat-treated and oil-tempered, hardened high-carbon-steel nails offer maximum stiffness and buckling resistance during driving. Because of the inherent stiffness of hardened nails, they usually are more slender than bright nails. Hence, as compared to bright or "stiff-stock" nails, hardened nails can be driven faster, are less likely to split wood, can be driven closer together and without predrilling even into dense hardwoods.

In wood product assembly, bright, plated, and enameled threaded aluminum, brass, bronze, silicon-bronze, stainless-steel, and nickel-copper-alloy (Monel) nails have their place whenever corrosion-resistance is a criterion, such as for kitchen and bathroom cabinets, containers for liquids and chemicals, boat construction, and similar applications. The stiffness of Monel wire makes it possible to manufacture an extremely slender nail which can be driven easily near the edges and ends of assembly pieces without prior pre-drilling or splitting during nail driving. The large count per pound of this outstanding nail and the inherent advantages of such a slender nail can more than compensate for the relatively high cost of Monel wire from which this nail is made.

Threaded nails are available with any kind of head desired, including slotted heads. Originally, slots were incorporated in nail heads to allow turning back of helically threaded nails with a screwdriver when a wood product had to be disassembled. In some cases, however, nails with slotted heads are used to simulate the appearance of wood screws to which customers may be partial. Properly threaded nails can be just as effective as or even more effective than standard wood screws of same shank diameters.

Product Improvement with Threaded Nails

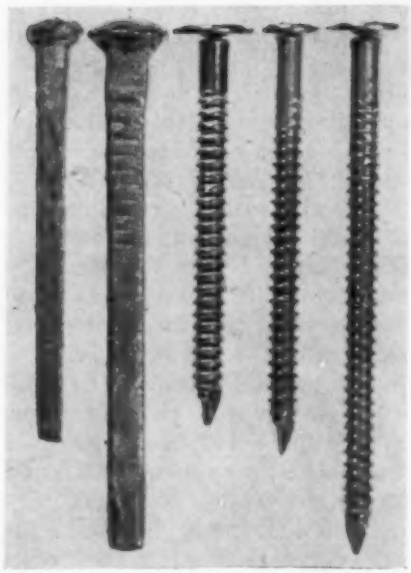
While a smaller number of smaller-size threaded nails may provide the same holding power as plain-shank nails, thus saving labor and material, the benefit of properly threaded nails is most outstanding wherever plain-shank nails fail to provide sufficient holding power.

Gold miners in California report that leaking wooden sluice boxes, water troughs, and concentrate tables, put together with plain-shank nails, lost over 12½% of the gold through cracks. In contrast, wooden containers of these types have remained in satisfactory and tight condition whenever assembled with threaded nails.

While fruit-picking lugs have had a normal service life of 7 to 8 years if assembled with plain-shank nails, the use of threaded nails has extended their life an additional 2 to 3 years.

Bottle cases, lobster pots, wooden flumes, chicken coops, collapsible chicken crates, feeding trays, hog pens, brooder houses, mushroom flats, seed flats, cold frames, greenhouse benches, pickling vats, water tanks, cooling towers, tobacco barns, boats, industrial trucks, truck bodies, and freight cars provide longer and more satisfactory service when assembled with properly threaded nails.

Culverts, bridges, wharves, docks, piers, and boardwalks exposed to continuous and extreme



Annularly threaded, galvanized-steel and bright stainless-steel nails and Monel nails (right) have replaced square boat nails in many boat building yards.

changes in moisture content of their wood are apt to fail as a result of excessive popping of nails if properly threaded nails are not used for their assembly. Bridge planking had to be re-nailed every six months, to eliminate the danger resulting from popped plain-shank nails, until threaded nails provided the required effectiveness. Damage resulting from popped nails is particularly impairing if road planking at railroad grade crossings is fastened to railroad ties with plain-shank nails, since popped nails play havoc with automobile tires. This planking must be fastened flexibly to allow tie movement and on a basis which makes possible economical periodical tie replacement. Threaded nails and spikes provide such flexible means of fastening for this road planking.

Heavy planks used for scaffolds and staging, often cross-bolted or steel-banded at both ends to prevent their splitting, are effectively cross-nailed from both sides with slender high-carbon-steel, annularly threaded spikes to eliminate end-splitting and the need for more expensive cross-bolts or steel bands. Such cross-nailing may also be used for railroad ties, to prevent their end-splitting, in replacement of S-irons. Since such nails can be driven from all four sides of the ties, they might be considerably more effective than S-irons.

Bump tests on boxes revealed that identical boxes assembled with cement-coated plain-shank nails withstood 8 bumps; assembled with helically threaded nails they withstood 24 bumps, and assembled with annularly threaded nails they withstood 30 bumps before failure was observed.

In the construction of bowling alleys, use of threaded nails is a must to attain permanent tightness. Fully satisfactory use of certain hardwoods for flooring purposes would be impossible without hardened helically threaded flooring nails. Fastening underlayment for linoleum with plain-shank nails may result in their showing through the linoleum several months after laying because of nail creep, while annularly threaded nails remain tight in subflooring, sleepers, and joists and, therefore, do not mar the linoleum.

In the assembly of case goods, especially of unbalanced construction, the large holding power of threaded nails may result in tight joints which previously could not be fully accomplished under extreme exposure conditions in adverse surroundings during service.

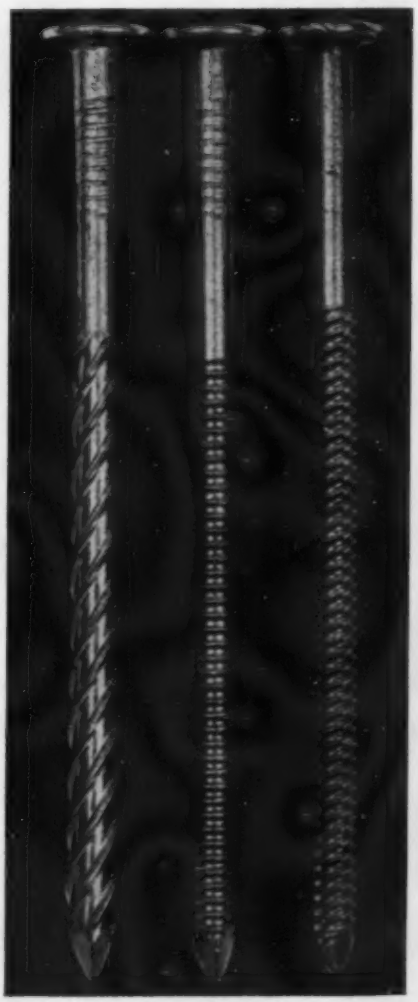
As indicated, a product may be improved by replacement of plain-shank nails with threaded nails. By replacing wood screws with threaded nails, a product may be manufactured more economically and its quality can be as good or, sometimes better than by using wood screws.

It was found, for example, that Venetian blinds can be fastened with threaded nails instead of wood screws at a saving of 40% of the cost of the fasteners alone.

Fastening of slat bearers to bed rails and of guide rails to drawers, in conjunction with gluing, can be accomplished just as well and considerably faster with less expensive, properly threaded nails than with wood screws. The world's fastest propeller-driven boat, nailed together with annularly threaded Monel nails, has run as fast as 172 m.p.h. without showing any cracks of her varnish at the planking joints and nail locations.

Conclusions

It is up to the manufacturer of wood products to determine where he can use improved nails to advantage. This question must be examined from the view-points of strength, rigidity, permanence, and, particularly, economy. In the case of many new and improved products, there is customer resistance which must be overcome the hard way before a better and more economical product is accepted. This customer resistance sometimes occurs when threaded nails are introduced to replace wood screws. Past experience has proved that whenever such replacement is proper, satisfactory field performance of



Most effectively threaded nails are provided with: (a) Helical threads with medium-lead angle, which form grooves in the wood when turning during driving. (Screwtite nail at left.) (b) Annular threads with double-ring shoulders over which the wood fibers are forced into the annular grooves like wedges released only when the wood is destroyed. (Stronghold nail at center.) (c) Helical threads with short-lead angle, which provide the nail with a uniform cross-section, thus combine the wedging features of the annularly threaded nail with the uniform cross-section of the helically threaded nail. (Stronghold Screwnail at right.)

Has Returned 100% On The Investment In Less Than One Year

MACHINERY FOR
PLANING
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AND SAWING

This is a matter of record for all to see (plant names and case histories on request).

Phenomenal, yes . . . but not surprising, because this versatile machine can perform many cost-cutting operations in one pass . . . dadoing, scoring, dovetailing, notching, relishing, sill-horning, irregular shaping, etc.

It works to close tolerances, too . . . a few thousandths if required . . . eliminates costly "hand fitting". Well-known for its low-cost, long-lived, trouble-free operation.

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Failure of ammunition boxes assembled with plain-shank nails has been prevented by using properly annularly threaded nails. Use of shorter, more effective threaded nails considerably reduces the number of rejections resulting from protruding shanks of long plain-shank nails.

the wood products assembled with the improved fasteners solves the initial problem of the manufacturer.

The satisfactory use of billions of pounds of threaded nails in service during the past 20 years is an index that threaded nails fulfill a need which was only too obvious. For a multitude of assembly problems, the threaded nail provides the solution. It is estimated that, during 1956, more than fifty million pounds of threaded nails were consumed by the wood-using industries in this country and Canada. The time will come when the multitude of types of threaded nails will be available in all hardware stores. As the general public becomes more familiar with these improved fasteners, customer demand will increase and threaded nails will replace the relatively ineffective plain-shank nail in even more cases than are under discussion today.

Many of the investigations performed at Virginia Polytechnic Institute, on which this report is based, were sponsored by the Independent Nail & Packing Company of Bridgewater, Massachusetts. Pictures in the article illustrate many of the firm's products. The cooperation and assistance of this forward-looking nail manufacturer are gratefully acknowledged.

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Air-operated stroke, actuated by foot button, is smooth, rapid, cushioned at both ends. Stroke length instantly controllable by handy knob. Light weight achieved through aluminum alloy castings. New motor (5 or 7½ hp, 3450 rpm) is more compact, lighter. Capacity, up to 23" stroke.

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Rugged construction throughout, using newest of design methods and materials. Special air cylinder has huskier piston rod, improved seals. Arbor diameter at saw blade is 1⅛", saw collars 6" diameter, to take either 16" or 18" saws. Filters keep sawdust out of motor, ram slide, other moving parts. Lubrication is largely automatic. Table equipment available if needed. *Write for detailed literature.*

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New Delta Lathe. A 12" variable speed wood lathe, is announced by Rockwell Mfg. Co. A 4-page photo-illustrated bulletin giving complete catalog listings of all motors and switches available for single-phase and 3-phase operation.

Delta Power Tool Division, Rockwell Manufacturing Company, 467 North Lexington Avenue, Pittsburgh 8, Pennsylvania.

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Packaging Research at the U.S. Forest Products Laboratory. This report is the historical review of packaging research work at the Forest Products Laboratory during the past 46 years. Write for report No. 2064.

U. S. Forest Products Laboratory, Madison 5, Wisconsin.

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Power Tools. Arbor saws, shapers, sanders and saw blades are just some of the items mentioned in this folder. Specifications and illustrations are given of these tools and their accessories.

Gillion Power Tools, P.O. Box 1, Lambert Field, St. Louis 21, Missouri.

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Designed to use straight edge lumber 4/4 to 8/4 in lengths from 10" to 100" **without** an extra preparatory edging operation, since LINDERMAN MACHINES WILL HANDLE CURVE AND IRREGULARITY VARIATIONS up to 3/8". Depth of joint requires only 3/32" to 3/16" depending on joint specifications.

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Designed to use bark edged lumber with a minimum of waste. All other operations of Standard Machine follow immediately without further handling. Bark edging then, in reality, becomes a "Bonus" operation.

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Designed to use 1" x 4" straight edged lumber in lengths up to 16 Ft. This machine automatically removes edgewise bend, joints, glues, and assembles, two pieces into a straight 1"x8" board. An air operated Straightening device at each end of the machine performs the straightening operation.

PREFERENCE HAS ALREADY BEEN INDICATED . . . a number of lumber dealers said that they feel "LINDERMAN PROCESSED LUMBER" is straighter and stronger than the same patterns run from a single piece of 8" lumber.

LINDERMAN JOINTED LUMBER produced by these machines can be used for ALL PURPOSES.
BUILDING CONSTRUCTION: Sheathing—8" to 24" approved . . . Novelty or drop siding . . . stair treads . . . dimension panels . . . interior trim.

OTHER USES: Unpainted furniture . . . caskets . . . hardwood butcher blocks . . . cutting tables . . . boxes and shooks including those covered by government specifications . . . etc., etc.

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OR COMPLETE INFORMATION ABOUT THE "LINDERMAN PROCESS."

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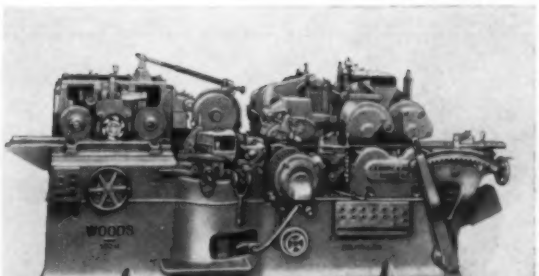

502 M Hardwood Flooring Matcher
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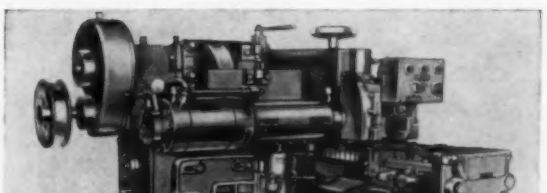
A heavy unyielding machine made especially for the production of precision flooring. It is an open type of machine, the flooring strip being visible at all points during its progress. The stock can be easily cleaned out in case of a break-up; an important time-saving factor.

525 BM2 Motor Driven Tongue Unit

SAW SPINDLES: Each saw spindle runs in precision ball bearings. Built with direct motor drive on all saw spindles. These units can be furnished belt driven.

CONTROL: Centralized control, convenient to the operator, is furnished. The electric switches with overload relays are housed in a separate metal cabinet.



525 BM2 Motor Driven Grooving Unit

In designing these units, considerable thought has been given to the interchangeability of parts. The natural result of this is less idle time and fewer parts for machine maintenance.

A spring-loaded clutch is built into main drive gear to avoid the possibility of breakage from jams.

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around the shop

This monthly feature answers readers' questions on common shop problems. If you wish to present a problem, or desire further discussion of problems described here, write to the Editor.

Following a recent accident at our hand-feed veneer clipper in which the knife dropped unexpectedly, we are having trouble getting anyone to operate this machine. Is there any fool-proof safety device available that we can install on the clipper that will insure against future accidents of this kind?

A very popular safety device used in many plants on the veneer clipper to protect operators of hand-feed machines is an electric eye arrangement which will not permit the clipper to operate until the operator's feeding hand is in the safety zone. The electric eye is located away from the clipping area so that the operator must remove his feeding hand entirely from the path of the knife before the beam can be interrupted. When it is interrupted, the electric eye trips the clipper knife through an electric solenoid valve.

• • •

We use the plate redrier for redrying both plain and fancy face veneers and currently have a difference of opinion with our superintendent regarding proper steam pressures for various types of face veneer and number of veneer sheets of different thickness to be loaded in each set of plates. Will you please advise us as to the common practice in each application?

Reports from plants to which your problem was referred show the average range of steam pressure used in redrying veneer at the plate drier to be: plain face veneer—65 to 95 lbs., figured face veneer—45 to 65 lbs., fancy face veneer—25 to 35 lbs. Loading practice varied from one to four veneer sheets per set of plates, but that most commonly used, based upon veneer thickness, appears to be: 3/16" or over—one sheet in each set of plates; ⅛"—two sheets; 1/16" or less—three or four sheets.

• • •

Our young son just returned from college claims to have been told that science has discovered that weather of any area can be determined by inspection of the annular rings of trees in that area. Is it possible that weather history is aged in the wood, as he says? If so, can you tell us how this is done?

Your son has learned his lesson well. Science has discovered that weather can be determined by inspection of annular rings of trees since their formation depends upon water that is available. The amount of space between each annular ring is said to distinguish between wet and dry growing seasons. Considerable research in this field was done by the University of Arizona's Laboratory of Tree Ring Research. Its director, Dr. A. E. Douglass, reported that study of many trees showed that in drought years, trees in many areas grow a much smaller ring than normal. When there is adequate moisture the ring is correspondingly wider. Accurate measurements provided a climatic record of 1,500 years from a study of annular rings of the oldest trees and those of prehistoric beams of the continent which also contained a definite number of distinctive rings, just as newly felled trees.

• • •

I thought I had a good knowledge of native American wood species but was stumped by a textile machinery salesman who says his company uses "Cornell" wood in weaving machines. What is it?

Your reputation as an American wood expert is still safe. You know "Cornell" wood as dogwood. It is a trade name given to the species by the textile industry which uses it commonly to make shuttles for weaving.

• • •

Our concern makes metal detectors to detect the presence of tramp metal in logs before they are sawn. We are interested in an item published recently to the effect that pulpwood operators are bothered by cat faces. Are these within our field of detection and what are they?

Cat Faces are usually found in logs taken from timber that has been turpentined. They are essentially metal gutters nailed to the

outside face of pine trees to guide the flow of the gum. This metal is often left on the tree to be grown over and hidden and of course in subsequent pulpwood form wrecks the chipper knives. This type of pulpwood often contains nails used to attach cups to trees to catch the gum as it flows from the cat faces. This would seem to be a good application for your metal detectors.

• • •

We have been advised that all boards should be machined for our furniture use so that the bark side will be the exposed face to be finished. Why is this so important?

Your informant was probably concerned with a condition known as grain shelling which could damage exposed faces. Wood technologists point out that in some wood species there is a tendency on the pith side of the board for the summer wood of one annual ring to separate from the springwood of the next ring and curl upward in a sharp edge that is easily torn or splintered in machining.

• • •

Can you explain in non-technical language the reasons for the large cell formation found in spring wood and the smaller cell formation in summer wood.

This exposition is usually expressed simply by all wood technology authorities. The annular rings of a tree are formed by cell growth and usually only one ring is formed in one year, except where false rings cause the formation of two rings, and ring formation is started in the spring when the sap begins to flow. Approaching summer the wood cells become relatively small. The sap returns to the tree roots in the fall and cell formation is more or less dormant during the winter until the following spring. It is that simple.

• • •

We have had considerable success with an incentive system installed about a year ago, but now we find that production is dropping off and even our best and most reliable workers seem to be loafing on the job. Could you help us with a constructive analysis of this problem?

Experience with similar problems raises the question. "Are your workers really loafing?" Every worker has certain limits beyond which he cannot be profitably pushed regardless of any monetary incentive. Beyond this point, his enthusiasm for his job decreases, personal pride in his own skill deteriorates, his efficiency begins to drop, and you lose his profit potential. Many times the temporary cessation of work that you call loafing may be caused by physical discomfort from excessive heat or cold, discomfort or fatigue from extreme or sustained physical effort, or eye strain from poor lighting. These conditions may be compensated by planned rest periods. The workers, themselves, would be the best source of information as to the cause of your current decrease in production and so-called loafing on the job.

My father came from England and when we complained about working longer hours than other plants in our area he used to tell us we were lucky not to be working in King Henry's time. Can you give us any information about this?

Your father was probably referring to working conditions in England during the reign of King Henry VII when working hours were established by law. Work days of this era began at five o'clock in the morning and ended at 8 o'clock at night, with one-half hour allowed for breakfast and an hour and a half for dinner. Thus, workmen of that time put in a 13-hour day.

• • •

We are considering the operation of power truck inside our plant to

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DRY, THIRSTY AIR

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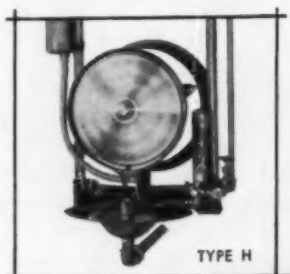
Bahnson UNIT HUMIDIFIERS

Automatic Humidity Control at Low Operating Costs



1. Reduces warpage, shrinkage, checking
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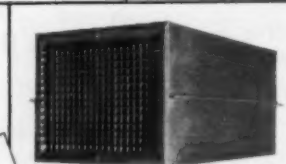
The most complete line of money-saving unit humidifiers for the woodworking industry made by the *world's largest manufacturer of industrial humidification equipment.*



- Money-saving — costs as little as $10 per unit yearly to operate.
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- Self-contained — needs only water or steam and electrical connections.
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speed up transportation of materials and work-in-process. We are concerned with floor support required for power truck operation. Do you have any data that would apply?

A comprehensive study of floor support required for power trucks was made, based upon practical strain measurement and local tests, with measuring apparatus applied to the underside of the floor to indicate deflection of structure. This study showed that power trucks average to impose a dynamic load to the supporting floor of about 25% more than the static weight of the loaded power truck.

• • •

Our insurance agent advises that our contemplated use of a gasoline-powered lift truck inside our plant will raise our fire insurance rates tremendously. We are aware of the availability of electric-powered lift trucks but have heard about an air-powered lift truck. Since we have an excess air supply we are interested. What can you tell us about this machine?

A commercial air-operated lift truck developed for inside-the-plant operation is said to operate from any air system with about 90 p.s.i. pressure, consuming from 200 to 250 cubic feet of air per minute in operation. The manufacturer states that this lift truck will maneuver within an area of about 18,000 square feet by means of a 75' hose on a retractable reel. (Crescent Truck Co., Lebanon, Pa.)

• • •

Due to limited siding facilities our incoming freight cars are placed on a reserve track and have to be moved manually for spotting for unloading. This is a time-consuming and laborious operation. We have considered the purchase of a small switching engine but the price is quite high. Do you know of any mechanical device in a reasonable price range that could be used to speed up and make this hauling and spotting easier?

Some concerns use a combination track-and-road gasoline locomotive for this purpose which mounts four standard AAR, steel track wheels and four retractible rubber-tired wheels arranged at right angles to the track wheels. Automatic transfer from one set of wheels to the other is controlled by the operator who drives the machine on track or road. A hydraulic jacking system is used in pulling freight cars which transfers weight from the car onto the locomotive.

In operation the locomotive is driven over the road and over the track to a point where the track wheels are in position to be lowered onto the track on the road wheels. The flanges help to direct the wheels onto the track. With road wheels retracted, the locomotive is moved to the freight car where its coupler and the car coupler are engaged in the normal manner. After coupling, the hydraulic jack raises the coupler against the car coupler to force the locomotive down on the track and transfer a portion of the freight car's weight onto the locomotive so that about 7350 lbs. of draw-bar pull is developed.

This locomotive weighs just 3 tons and has a road speed of about 20 miles per hour. It will push or pull one or more freight cars with tractive effort in lbs.: from draw-bar pull of 7350 lbs. at 1.5 miles per hour in first gear to 1100 lbs. at 9 m.p.h. in fourth gear. (Trackmobile, Whiting Corp., Harvey, Ill.)

• • •

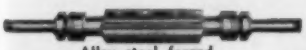
It does not take great men to do great deeds: it only takes consecrated ones. —Phillip Brooks

Your request

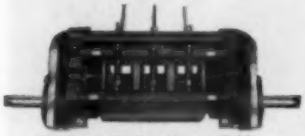
A low cost 6 roll planer and matcher with the FEATURES of the high priced machines

NEWMAN M-68 BALL BEARING PLANER and MATCHER

Heavy duty quill mounted side head spindles.



Alloy steel forged "DYNETRICALLY" balanced cylinders. Four or six knives



Sectional chipbreaker available.

Bottom head pulls out for quick grinding and changing of knives.

- Six 8" diameter feed rolls.
- All cutterhead bearings— interchangeable.
- Built-in jointing devices.
- Ball bearing belt tighteners— for all belts.
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SAFE OPERATION OF CIRCULAR SAWS

A Safety Feature

By E. Mottershead

The essential hazard in ripsaw operation is the kickback. A piece of lumber catches on the rear of the saw just as the cut is completed and is thrown with great force toward the operator.

To eliminate or reduce this hazard to a minimum, every rip saw should be provided with a hood guard and a splitter, unless a jog and fixture are used for semi-automatic operation. Every manual feed ripsaw should be provided with efficient anti-kickback dogs or cams in addition to the hood and splitter. Again, this may be eliminated if jig and fixture are used. In addition, every rip saw should be so guarded that there is no possibility of contact with the saw underneath the saw table.

Hood

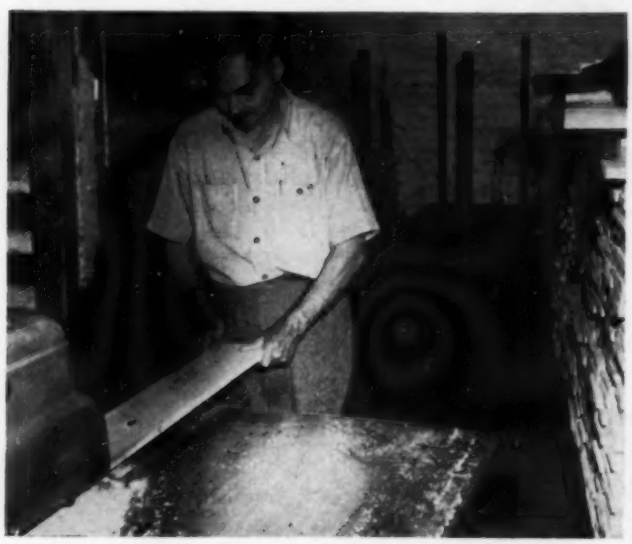
According to standards published by the National Safety Council, the hood should be substantially constructed; provide maximum protection to the operator against cuts by accidental contact with the saw; and, at the same time, protect him from flying splinters and possible broken saw teeth. It should be made of aluminum, wood, or other suitable material so that the saw will not be broken should it accidentally come into contact with the hood.

The hood for a manual feed ripsaw should permit a clear view of the saw at the point of operation. It should cover the saw above the table at least to the depth of the teeth and should automatically adjust itself to the thickness of the material being cut and remain in contact with the material while it is being cut.

The hood for a self-feeding ripsaw should extend to a position not more than ½" above a horizontal plane passing through the bottom of the feed rolls, or it should be so constructed that it encloses the saw and feed mechanism as a single unit. On a tilting table manual feed saw, the hood should be so designed that both sides will rest on the table or on the material being cut. On tilting arbor saws, the hood should be so supported as to be in alignment with the saw at all times.

Splitter

The splitter should be made of material such as saw steel and be ground to a smooth finish. It should

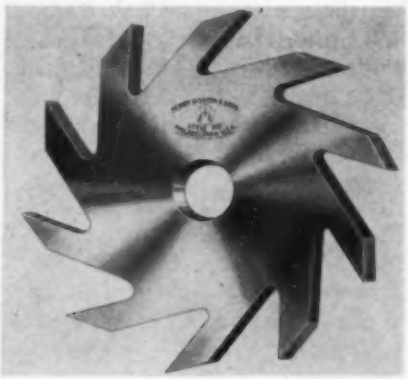


WRONG: Even though this saw is provided with kick-back dogs, guard, and splitter, operator should not stand directly behind the work as shown, nor should he run the piece through the saw without wearing protective leather kick-back apron.

RIGHT: Standing well-balanced and to one side, wearing kick-back apron, workman shows proper handling of wood through rip saw. Safety glasses rather than goggles are found adequate because of suction of chips and sawdust into eliminator built into the machine.

WHICH SAW BLADE FOR WHICH JOB?

(1) .....



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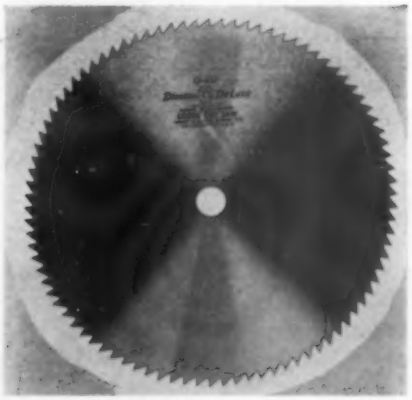

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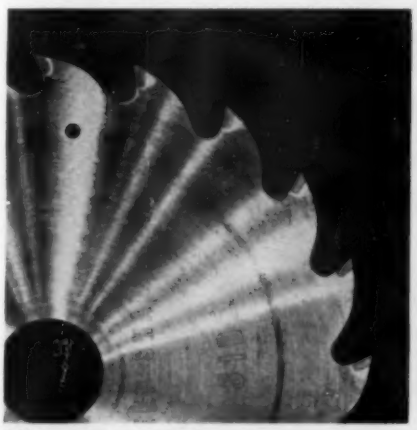

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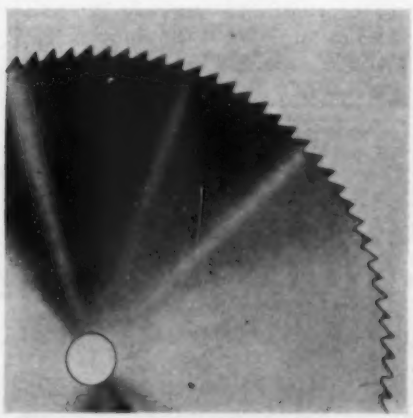

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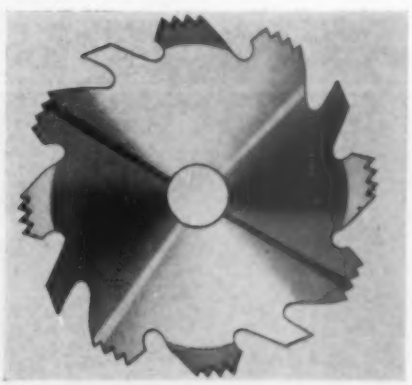

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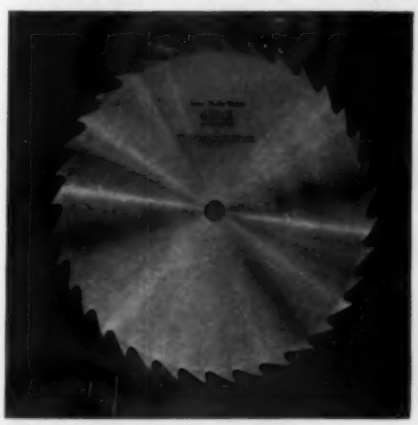

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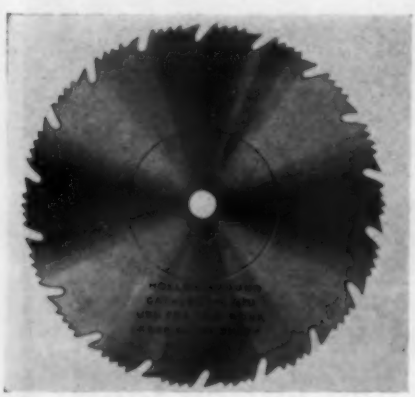

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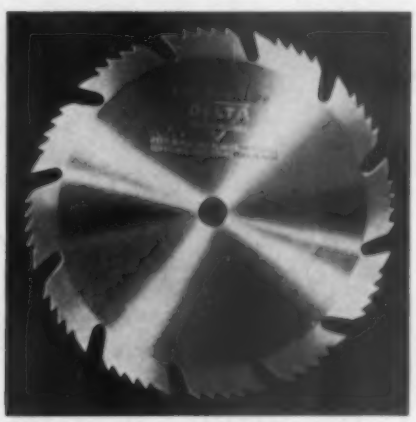

(9) .....

be slightly thinner than the saw kerf and slightly thicker than the saw blade. It should be at least 2" wide at the top of the saw table. The splitter should be securely fastened at the back of the saw in such a manner that the clearance between the splitter and the saw does not exceed ½". On the tilting arbor manual feed circular saw, the splitter should be so supported that it is in alignment with the saw at all times.

Anti-Kickback Dogs & Cams

Anti-kickback dogs and cams should be made of steel or equivalent material. They should be installed between the splitter and the guide. Additional dogs may also be installed on the off-side of the saw. In either case, they should be in contact with the work as it moves under them.

The width of the dogs or cams at right angles to the hood should be not less than ¼". Teeth should be at right angles to the hood. The motion of the dogs or cams should be such that any backward movement of the material being cut will cause them to engage instantly and hold the material securely. This holding power of the dogs or cams should be equally effective on all thicknesses of material.

Feed rolls of self-feed ripsaws should be guarded by a semi-cylindrical guard to prevent the hand of

the operator or off-bearer from being caught between the rolls and the material or between the rolls and the chain feed mechanism. Chain feeds at the rear of the self-feed ripsaw should be so arranged that the hand of the off-bearer cannot be caught between the chain feed and the end of the table.

Safe Practices

As with other power-driven woodworking machinery operators' carelessness and failure to follow essential safe practices remains the major cause of injury with the circular saw.

Failure to move stock gently forward well positioned on the table; forcing material against the blade; standing in an off-balance position; standing directly in back of the blade; keeping the floor littered with material which could cause stumbling; and other unsafe acts are major contributors to accidents with these machines. Only trained and authorized personnel should be allowed to operate these devices, except in the case of a learner who is operating the machine under the supervision of another person acting as instructor.

Photographs in this article: Courtesy of Mall Tool Co., Black & Decker Mfg. Co., Henry Disston & Sons, and the Delta Manufacturing Co.

Answers to Saw Quiz.
(1) edger; (2) grooving; (3) cross cut or cutoff. (4) carbide tipped; (5) flooring; (6) dado blade. (7) rip; (8) combination; (9) novelty tooth.

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Here's a handy guide you'll want for regular reference. New Greenlee Catalog 34-M gives complete information on hollow chisels and bits, router bits, machine bits and drills, dowel bits, countersinks, plug cutters, and other high-quality tools that increase efficiency of woodworking machines.

This well-illustrated, 20-page book shows tools in detail . . . quickly gives data on sizes and types for easy selection of tools best suited to your work. Also includes tool sharpening instructions and a helpful wood screw boring chart.

If you haven't a copy, or need more copies, write today for Catalog 34-M. Greenlee Tool Co., Division of Greenlee Bros. & Co., 2131 Herbert Ave., Rockford, Illinois.

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CIRCULAR SAWS

Maximum Safe Operating Speeds

The following table shows r.p.m. for various diameters of saws when the peripheral speed is 10,000 f.p.m. It has been taken from the Standard Safety Code for Woodworking Machinery.

Diameter of Saw Inches	RPM
8	4,774
10	3,819
12	3,183
14	2,728
16	2,387
18	2,122
20	1,910
22	1,736
24	1,592
26	1,469
28	1,364
30	1,273

CIRCULAR TABLE SAWS

1. Before starting the saw, make sure that all guards are in place and operative.
2. When ripping, be sure anti-kick-back dogs are working. Avoid kick-backs by standing at one side of the saw, not in line with it.
3. Keep a firm grip on the work and keep the hands out of the line of the cut.
4. When necessary to push narrow pieces through between the saw and the guide, use a push stick.
5. Do not "crowd" a saw or put your weight against the work.
6. Keep saw table clear of scrap material. Use a brush for this, never the hands.
7. Use only saw blades that are properly sharpened and set, and that run straight and smooth.
8. If a saw blade is cracked or warped, report it to your foreman.
9. Sawdust underfoot is slippery; keep your workplace clean.
10. Never leave a saw until it has stopped revolving.

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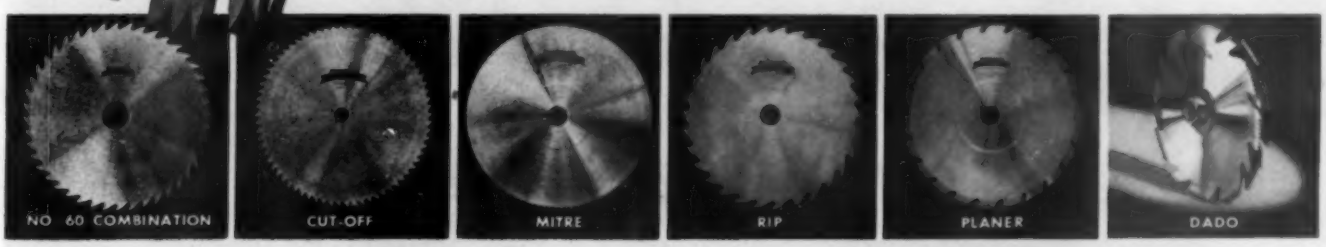

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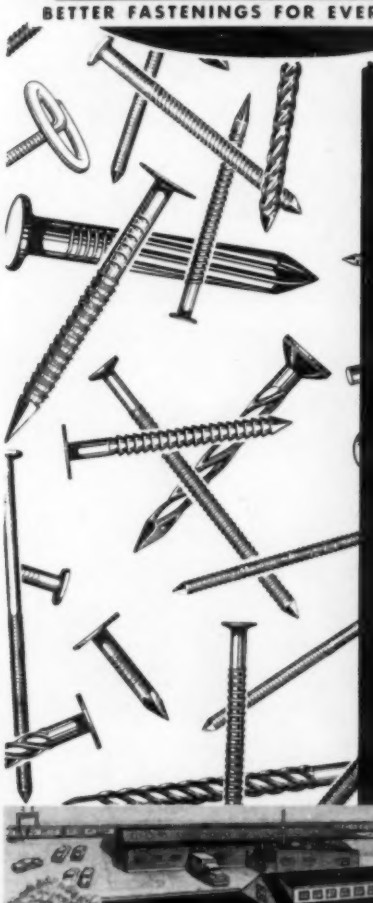

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What's New and What's Needed in Woodworking?

Part 1

SAINTS AND SINNERS

By Hoyd B. Price

Production Manager, National Homes Corporation

To the woodworking manufacturer, the machinery designer or supplier, when able to deliver the equipment as required, is the "saint." But when there is need for a special piece of equipment to do a special job and the machinery suppliers advise there just isn't any such animal either designed or available, his halo becomes a pair of horns and his wings turn into a tail.

National Homes Corporation, Lafayette, Indiana, has been confronted by many such disappointments in the past several years. The prefabricated home manufacturing industry has need for many pieces of "unusual" equipment to keep pace with furniture and other modern woodworking plants.

Prefabrication of homes, like automobile assembly lines, is here to stay and is growing rapidly. It took National Homes 13 years to produce 50,000 homes, but took only 3 additional years to produce another 50,000 homes. This emphasizes the rapid growth of prefabrication and the increased need for machinery and equipment for this industry. Some such equipment needed, not now available, is:

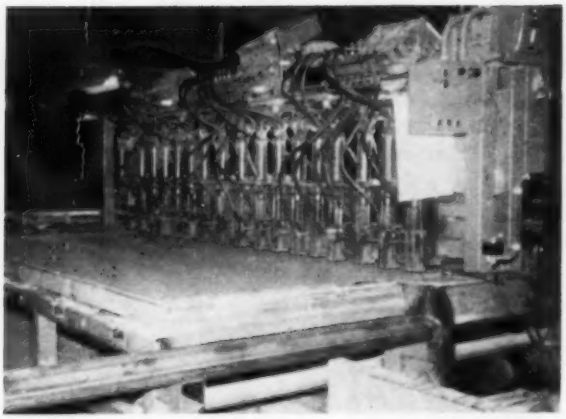
- Automatic wall panel framing nailers.
- Large versatile saws to handle up to 24′ framing parts (roof rafter, ceiling joists, floor joists, etc.) making vertical, horizontal, dado, and knife cuts, as well as compound miters and boring.
- Sheet rock dimpling and automatic gang nailing machines.
- Continuous moving assembly lines, turnover and hanging equipment.
- Automatic finishing equipment for large assemblies.
- Fast accurate door and jamb routing machines, and many other items used almost exclusively in the home-building industry.

To further emphasize the serious need for equipment as mentioned above, in the early part of 1954, in order to maintain costs and produce the amount of homes necessary, National Homes attempted to secure a gang nailer or one designed for our particular need which would drive a series of up to 22, no. 6 gypsum nails, in anchoring 4′ wide by 12′ and 14′ long sheet rock to ceiling and wall panels. Every reputable nailing machine manufacturer was contacted, and much time was spent in analyzing the problem and trying to reach a satisfactory workable solution. All of us knew that no similar piece of equipment had been made or requested; and actually it was a complicated and entirely new machine, since these nails could not be above or below the surface of the sheet rock and certain compensations had to be made for the variation of materials, etc., in the assembled panel.

After some several months in this effort we could find no one who seemed to be interested in designing or furnishing such a piece of equipment. Out of dire necessity we collected all the ingenuity within our own organization, and after a relatively short time we were able to design and make such a piece of equipment that has worked very satisfactorily and has been very instrumental in enabling us to produce the quantity required, as well as keeping our cost well

This three-part series on "What's New and What's Needed in Woodworking?" was inspired by the fall meeting of the Mid-West Section of the Forest Products Research Society. We appreciate the cooperation of the society in supplying the copy used in Part 3.

"The most important factor for us all to consider is the necessity to advance through cooperation! There is no reason why the machinery manufacturer and wood products manufacturer cannot try to recognize each other's problems and work toward solutions. The two groups should organize in some way to solve problems — not merely justify what we have by way of machinery or what we are doing."



Gang nailer designed and manufactured by National Homes.

in line. We now have 23 of these nailers in operation in our plants.

I only mentioned this to point out that we, as home manufacturers, are not nearly so well equipped or have the know how to produce equipment as do the machinery manufacturers. All of the statements made above are certainly not made with the intent to criticize in any way the many wonderful machinery suppliers that have done such a wonderful job, without which we could not have accomplished the many things we have, but is only brought out to emphasize the growing need for the machinery designers' and builders' help in securing the equipment that is not now available.

There are many industries that would fall somewhat in this category, such as, makers of large walk-in refrigerators, the trailer industry and any wood manufacturer of large units; and, without question, each of these manufacturers would have their own needs for specific equipment; and I can best talk about the specific needs of the home-building industry, since that is the most eminent one, to me personally, at present. If the designers and builders of machinery should ask specifically what type of machine was most needed at the moment, of course it would be impossible for me to answer for even the many home prefabricators; however, it is my firm conviction that all of us need help and by working closely together in cooperation with the designing and building machinery manufacturers, I am very sure that it would be well worthwhile for the machinery trade as a whole, as well as relieving many, many headaches that now confront the prefabricated home industry.

It might be suggested that through a co-operative effort by the many machinery manufacturers forming a research staff of a few engineers to call upon and work with the many woodworking industries to attempt to co-ordinate the thinking between the two industries so that a development of some nature could be achieved. This would be a decided advantage to the woodworking industry, as well as to opening a new field for the machinery manufacturers and dealers.

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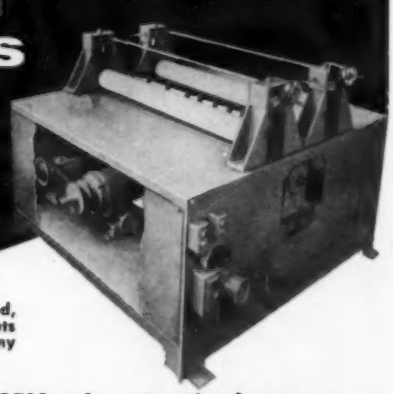

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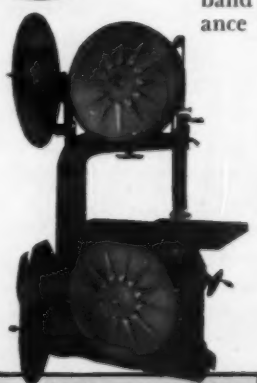

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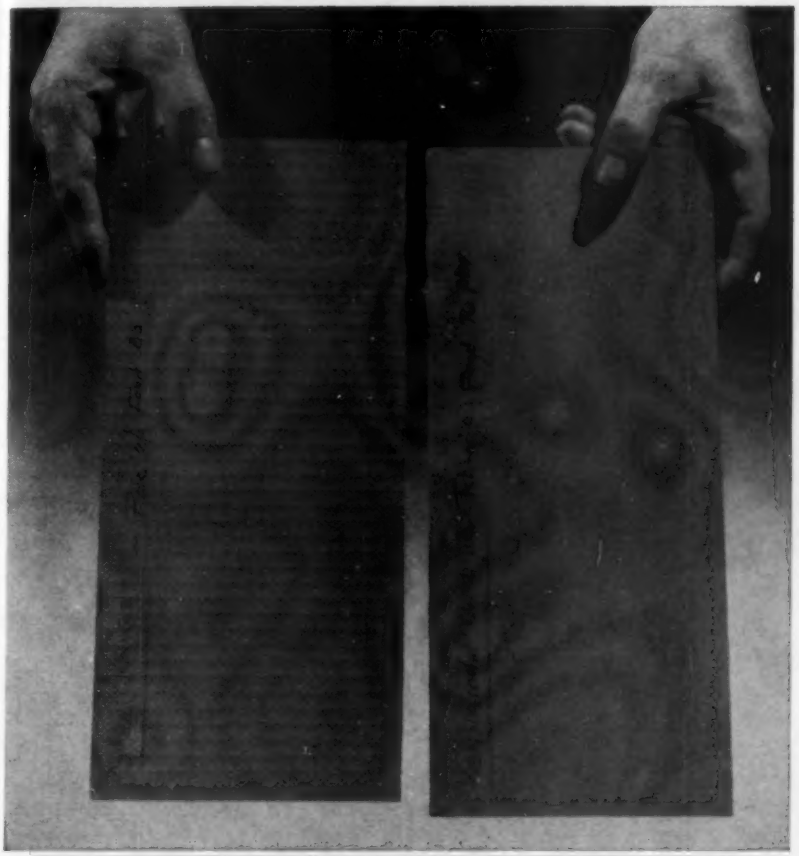

Finish with jointed steel knives Finish with jointed Kennametal knives

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★ **Increase production 100%** ★ **Reduce maintenance costs**

★ **Eliminate "washboard" finish** ★ **Improve dimensional accuracy**

Switching to 50-inch Kennametal carbide planer knives increased production and improved finish of both high-density and low-density hardboards.

Output of *steel* knives, in two working shifts or 16 hours per day, totaled 80,000 sq. ft. of hardboard. After almost every 3 hours, jointing was necessary and at the end of 16 hours of normal operation, the knives had to be completely reground. Maintenance required approximately 5 hours for each 16 hours of operation. In addition, it was difficult to maintain required finish and dimension because of the tendency of the steel knives and head to deflect, causing excessive "washboarding."

KENNAMETAL PERFORMANCE. Output with Kennametal knives, working two shifts or 16 hours, totaled 162,000 sq. ft. of hardboard. No jointing or grinding of these carbide knives was needed, thus requiring no machine downtime. After 14 eight-hour shifts of normal operation, Kennametal knives showed no evidence of wear. The rigidity of the solid Kennametal knives resists deflection; therefore, the board dimension is uniform and the finish is improved.

Why not try Kennametal knives in your operations? If you cannot get engineering service or carbide maintenance information from your present supplier, write to KENNAMETAL INC., Latrobe, Pa.

These synthetics successfully planed with solid KENNAMETAL Knives

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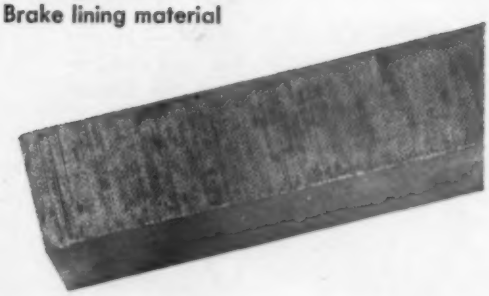

Phenolic fiber product

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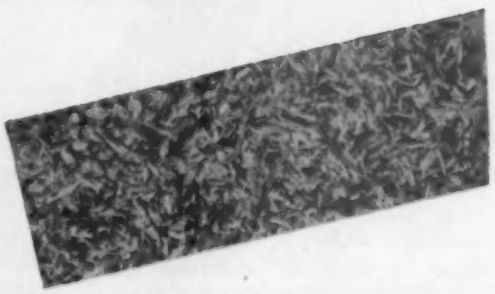

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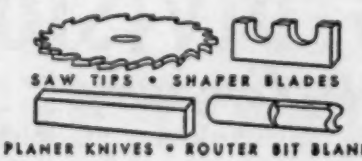

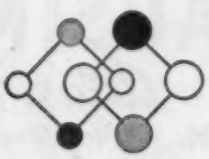

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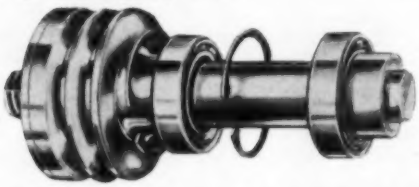

BIG ARBOR, BEARINGS — Arbor is solid bar of precision ground steel, ¾" in diameter. Spins on two large, sealed-for-life ball bearings . . . kept under preload by beveled retaining ring.

MOST EFFICIENT TILT and HEIGHT CONTROL — In both mechanisms, rack teeth are machine cut cast iron, ¾" wide . . . worms are 1½" diameter steel. 8" diameter handwheels, 4½" diameter tilt dial.

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What's New and What's Needed in Woodworking?

Part 2

Thinking Through The Manufacture of Wood Products

By Carl Chekouras

The prominence of woodworking has been clearly established in the world! From its beginning woodworking has been a leader in the manufacture of modern beautiful furniture and buildings. As man originally went to trees for shelter, he still depends on wood for his shelter and furnishings.

Let us think for a few minutes, what does woodworking mean to me? I was born in a wood frame house and soon placed in my own wooden crib. My father was a woodworker. Our house was furnished as any shopworker's at that time. We had wooden furniture. I think of my mother's big wooden breadboard which she used for making bread, pie and cookies. As a child I had toys and a sled that dad made of wood. A few blocks from our home was the old wooden bridge that crossed the Rock River. From the center of the bridge looking southwest you could see the paper mill and near it a big factory that manufactured paper making machines to use with wood pulp. Near these shops was a factory that manufactured woodworking machines; another that manufactured knives; a large millwork company and two smaller cabinet shops were also near. About a mile north was the amusement park. I remember how fascinated I was over the giant roller coaster built on sturdy trestles of wood. From the park, back across the river, was the interurban bridge. For many years its wooden legs carried the fast interurban cars. Not far from the east end of the interurban bridge was a great big factory. My father worked there. At this factory they made many types of engines but my dad worked in a department that made great big wooden windmills, many of them are still in use. Up the hill and a few blocks east was the school. It still stands made of bricks and wood. Our school had cast iron and wooden desks. Our teacher had a wooden appliance that left an impression on many of us. So far this appears to be an auto-biography—it is.

But what is happening to wood? Have we forgotten its usefulness? True, we have many more things in our homes today but we still have wooden furniture and more than we used to have. Compare the homes of today with those of a few years ago. They are not as tall, but are longer and have two car garages. All materials now used are fully machined. The older homes had plastered walls, now wood paneling provides the long lasting beauty. More windows require more millwork. Television and radio sets are in beautiful wooden cabinets. Larger kitchen cabinets of formica covered plywood are used. Our growing population needs more homes, more schools, churches, municipal buildings, etc., and as the use of metal products increases so does the need for wooden products. Formerly a few men with hand tools and slow machinery manufactured a piece of furniture or a cabinet. Today we require high speed fast production methods, modern wood machining, scientific research in glue, finishes, preservatives and handling.

Speed of production has increased many times in the past quarter century but wood machining must still increase its output. The greater percentage of woodworking machines are obsolete or too slow. The wood machining industry has fallen behind. In a recent speech Mr. Ray Du Bruq, of the woodworking machinery association, told the members of the F. P. R. S. of the tremendous increase in imports of wood machined products. Our used machine market can still sell machines that are too antiquated to meet today's output requirements. If molding machines are capable of over 100 f.p.m. output, then all 30, 50, or 60 f.p.m. machines are obsolete. We expect carbide tipped tools, substitute materials and conveyor systems to make up for our frugality toward modern wood machining. From the source of power to final shipping all phases must be modernized. The one new machine we installed last year is not the answer to all production problems. A new high production multiple ripper needs more stock to cut. The machine produces many more pieces of stock so subsequent operations must also be accelerated. There is a danger of overproducing only if your product is not readily accepted by a hungry market. It is then evident that we can improve the position of the wood-

working industry by meeting the challenge presented by today's market. Furniture, sash and door, packaging and many other phases of the woodworking industry are constantly being threatened by replacement with substitute material. Steel could replace the old barn type swing open garage door but it cannot replace the beautiful paneled overhead garage doors. The result is obvious as manufacturers of garage doors are enjoying good business. But let's take a look inside. Overhead door manufacturing is a comparatively young industry yet it has accepted modern methods and employs modern machinery. This industry has met and overcome what could have been crushing competition.

Similiar conditions face other woodworking industries. Kitchen cabinets are challenged by steel but now with soaring costs of the basic materials there is a chance to meet that challenge. More beauty and flexibility can be incorporated into the design of kitchen cabinets made of wood. Laminations and new preservatives increase the life and beauty of wooden cabinets. The steel cabinet manufacturer is not willing to alter his production to make cabinets of odd sizes. The furniture manufacturer can change his designs to meet the ever changing market much easier than the steel furniture manufacturer can change his expensive dies. Fabric and plastic covers can more easily be fastened to wood than to steel. Moreover wood has the advantage of beauty and warmth over steel. In the magazines that show beautifully planned and designed homes, it can be definitely noticed that the most beautiful settings include wooden furniture.

Now consider your own operation. Is your production such that if you were able to produce a better quality for less money you could increase your sales? But how is this possible with increasing costs of labor, materials and handling? You should first analyze your market, making sure that you have enough models or sizes to fit the need. You may find that through a small amount of re-design you can include more items that can be manufactured in the same production process. You can then further check your product to see if it can be beautified or made more efficient by the use of a different kind of material. Being satisfied that you have given a fair study to the re-designing of your product and have selected the most suitable material for it, you then can look for better methods of manufacture.

You may find that your products can be incorporated so that parts of one product can be made at the same time you are making parts of another. Now, let's give consideration to the wood machining portion of manufacture. Can the output of your saws be increased by the use of carbide tipped saws, increased horsepower, stepped up feed rates or a combination of any or all of these factors? In other words have you accomplished your sawing operations at the fastest possible speed? If you find that, after making these analytic surveys, you are still behind in your cutting, it is not alone evident but imperative that you need faster sawing equipment.

The next phase of wood machining may be in molders, surfacers or glue jointers. Here is where mistakes often occur in thinking this machine is producing all the parts you need and for that reason you do not believe that a new machine is needed. Instead, you should consider, "Is the planer machining as much material as we would like to produce in one working day?" After all your goal is to increase production and not just to keep within your minimum requirements.

After giving much thought to the productivity of your wood machining department, your attention will then go to the sanding of the material. In this department, as well as the wood machining department, there is no such condition as good enough. Sanding is the basis upon which your attractive finishes are to be applied and must meet with the customer's approval. The assembly department is where profits may be made or lost. Modern assembly methods must be used to meet today's production demands. Air clamps, electronic gluing, moisture condition materials, and many small factors go together to make the fitting and assembly department a critical area in your production.

Finishing

The greatest salesman for your product is definitely the finish. We cannot escape the fact that the buying public is very conscious of the beautiful finishes of the articles they buy. Television, radio and newspaper advertising all emphasize the beautiful finish of the product. Whether your item is a coat hanger or a prefabricated house it must have the best finish you can possibly use, yet fit into its price field. Notice how the automobile manufacturers are emphasizing beautiful colors, two tone finishes, beautiful interiors. In fact, one hardly knows that the automobile is equipped with a motor to hear the salesmen talk of the beautiful features of it. One automobile company once advertised, "Eye it, try it and buy it." No manufacturer who produces beautifully finished wood products is suffering for business in today's market.

At a recent meeting the wood machinery manufacturers gave a presentation of the new machines they had to offer and in the next panel session the woodworkers asked them why machines could not be provided for doing this or that operation. But where were they when new machines were introduced and had to be shelved because the market was not willing to accept them? Much went into the design and engineering of such machines and they were not accepted by the woodworking industry. The industry thought the machine was not needed or did not fit into the present scheme. Many manufacturers refused to try new machines in order to improve output.

Let's thoroughly study the manufacture of wood products. Let's become so religious in our study that we can come up with products that not only meet the challenge offered by the wood substitute products, but beat them and we can resume our rightful place in the manufacturing world. No company ever went broke by using more of a better quality item!

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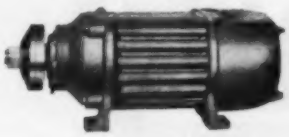

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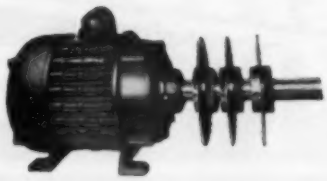

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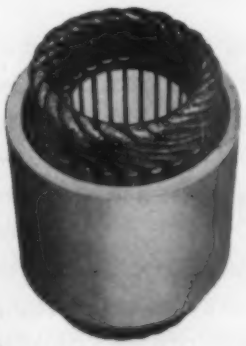

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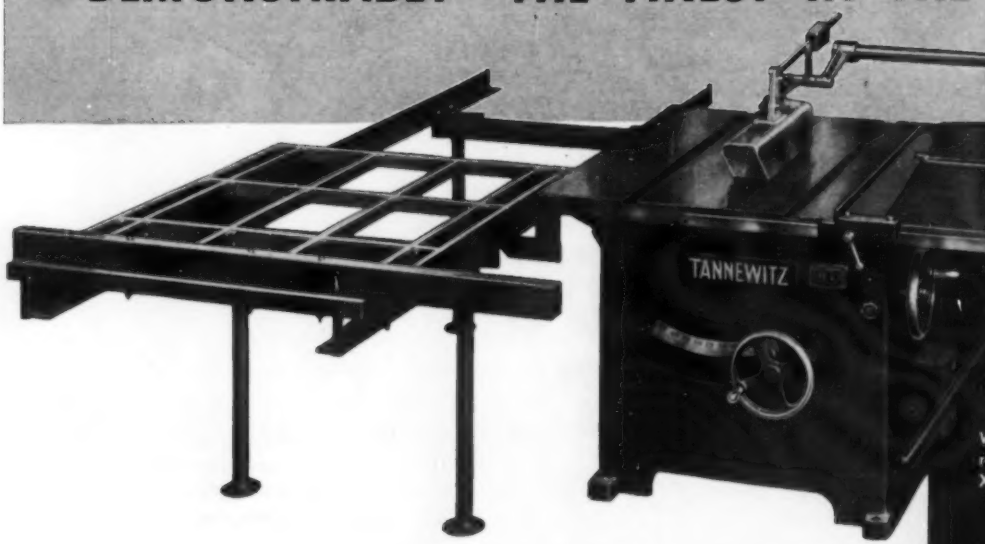
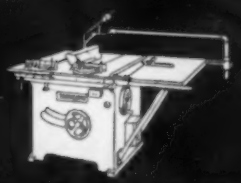


TYPE "XJ" ◀ AT LEFT

With extended table at right and removable roll-table at left. (No. XJW)



Sliding left section top and extended table at right (No. XJSW)

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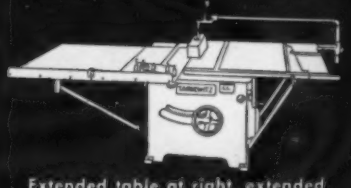

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What's New and What's Needed in Woodworking?

Part 3

SYNOPSIS OF THE PANEL DISCUSSION CONDUCTED DURING THE F.P.R.S. MIDWEST SECTION MEETING

By R. P. A. Johnson

Chief of Physics and Engineering Division
U.S. Forest Products Laboratory

The panel discussion on "What is New in Woodworking Machinery?" presented by various representatives of machinery manufacturers emphasized that manufacturers today are bringing out more modifications and improvements on existing machinery than they are introducing radically new machinery.

A number of trends in improvements were noted. First is the trend toward more automatic control of machinery to eliminate unnecessary manual operations. Another trend is toward greater automatic devices. For example, hopper feeds which can take short lengths of lumber and speed up the output rate of the machines. The principal limitation to increasing speeds of woodworking machinery, as mentioned by the speakers, is in material handling. Here it is apparent that the greatest amount of development must take place if production rates are to be increased.

Automation was high on the list of developments to come, which reduced to its simplest terms in the woodworking industry simply means higher speed, more automatic conveyorizing.

Broadening of machinery lines was also noticed among the manufacturers. For example, the Ekstrom-Carlson Company has now expanded its line to include a straight line rip saw and a push button cutoff saw.

A noticeable trend toward manufacture of complete finger-jointing machinery and material handling equipment was noted. At least three firms represented at this meeting (Yates American, Greenlee and Union Tool Corporation) have new finger-jointing machinery or have some under development.

The more than 250 persons in the audience at this session raised numerous questions to each of the manufacturers. In general, they agreed that machinery manufacturers will have to develop means of enabling faster setup time on machines, especially for woodworking plants doing custom work. For example, on a molder if as many as two hours are required for set-up and change-over, the machine is being utilized only three-fourths of the shift.

Another need is for greater attention to noise abatement. As machines get up to higher operating speeds they create noise conditions which may be actually physically injurious or at least opposed by employees, contributing to fatigue and lower quantity production. It was apparent from the panel discussion that machinery manufacturers will have to give higher priority than in the past to machine design improvements.

Getting down to the specific panelists, Mr. Tom J. Kilker of Yates-American described their 8-

"If we are to achieve in the woodworking industries by automation that which has been accomplished in the metalworking industries; by the automobile manufacturers and many others, this cooperative effort is a necessity. . . . It is, indeed, a tremendous job and requires all the resourcefulness of all the parties concerned!"

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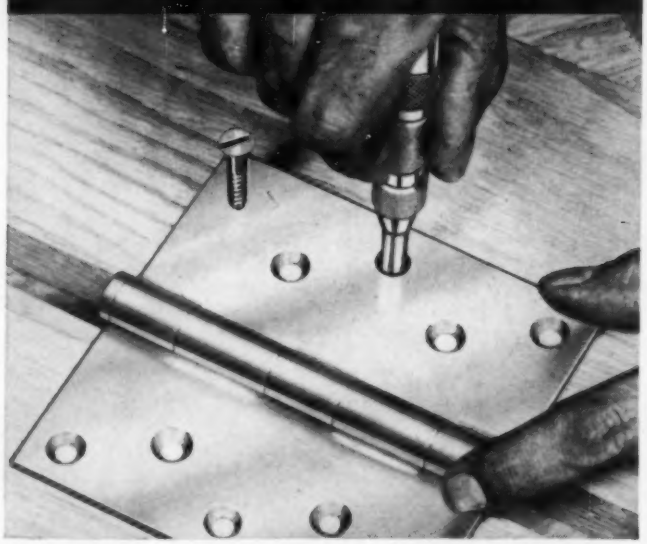

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drum sander which, the firm says, can work to close tolerances up to 2½ thousandths of an inch. Mark Hoeper of the Solem Machine Company discussed 2, 3 and 4-drum sanders as well as company's double deck sanders. He claimed particularly extreme accuracy obtainable on the 8, 6 and 4-double deck sanders. Carl J. Heinzelman, Jr., vice president, Union Tool Corporation, discussed their line of gluing equipment for panel gluing and assembling of TV cabinets, with particular reference to high frequency curing. His company has made great strides in finger jointing equipment in which the joints are cured by high frequency and all material automatically cut to length and automatically stacked by vacuum stackers. Mr. D. B. Perkins, Greenlee Brothers, discussed Greenlee's entirely new finger-jointing machine, the first unit of which is now undergoing manufacture. These and similar discussions of finger-jointing machinery pointed up the need to obtain better utilization of short material.

John Hyler, well known writer, representing the Mattison Company, described this firm's variable speed rip saw which enables quickly adjustable speeds from 48 to 228 f.p.m., depending upon the species and density of lumber being processed. He also described a two-blade straight line rip saw in which one blade is instantly adjustable to practically any width but permitting trimming of both edges simultaneously.

An additional panelist was Henry Cockrell, chief engineer, Wisconsin Knife Co., who discussed new developments in sharpening of cutter heads and knives. He said that in the wood industry there was widespread tendency to fail to recognize the importance of using quality tools, properly balanced and sharpened, on major equipment valued at as much as $20,000 per unit. He stressed the false economy of saving pennies on tools for machines that cost thousands, and emphasized also that it is not good economics to employ unskilled operators to run this expensive equipment.

The panelists agreed that the manufacturers have no "cure-all" gadgets that will solve all machining problems. They stressed that continual progress is being made in modernization through addition of new equipment or attachments.

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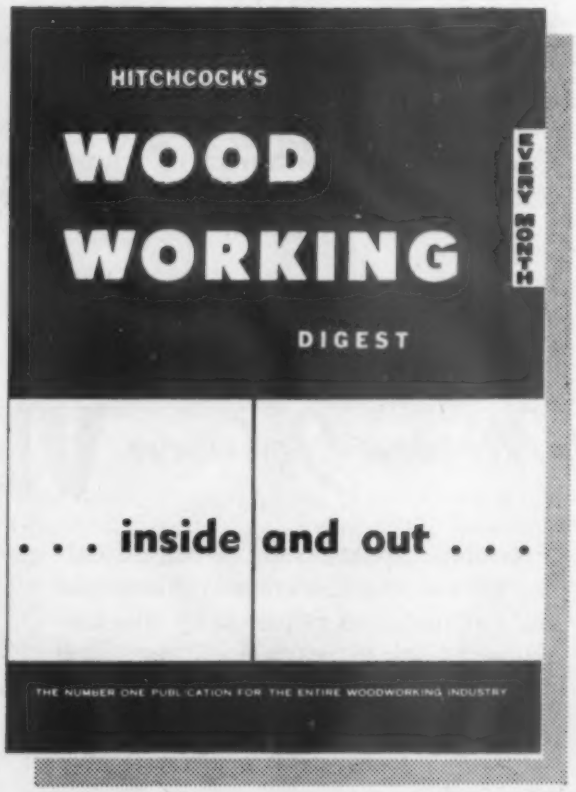

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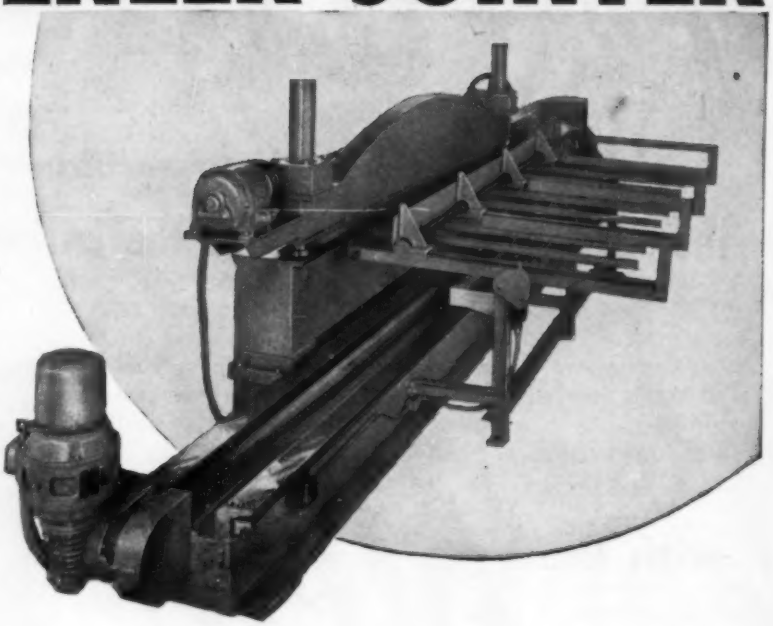

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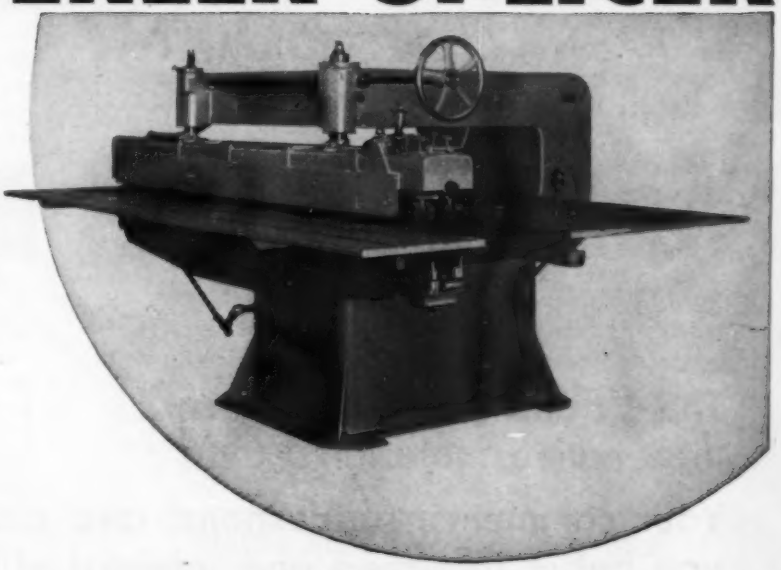

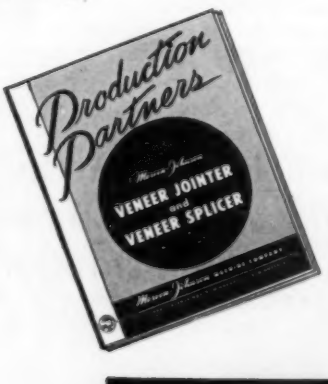

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Pianos and Plywood

By Thomas D. Perry

The piano is undoubtedly the ultimate in skilled workmanship among wood products. Not only is it an intricate mechanism, but its function of producing sound, or vibrations in the air waves, requires extreme accuracy and phenomenal synchronization to produce harmonious effects as the strings are struck in unison or in sequence. Any attempt to describe these functions of a piano is far beyond the scope of a mechanical engineer, who is only endeavoring to outline the woodworking operations involved in making the various plywood parts of a modern piano.

Types of Pianos

A piano consists largely of wood parts; except for the plate, a large metal casting over which the strings are stretched; the strings themselves, drawn with amazing accuracy from special steel alloys; the tuning pins, linkages in the action, pedals, hardware and the like.

Pianos fall into two general classifications: the *grand piano*, in which the strings are stretched in a horizontal plane, and the *upright* piano with the strings extended in a vertical plane. The *concert* grand piano is the top of the line.

Other grand pianos diminish in size by intermediate steps to the baby grand (Fig. 2), which is particularly adapted to home use. The upright piano may not be quite the equal of the grand in musical performance, but its space requirements against a wall, make it much more suitable for modest sized rooms in most homes. Upright pianos, Fig. 3, of good quality are excellent musical instruments and entirely adequate for most players below the professional level.

The major wood parts of a piano, are (1) the case, enclosing the working parts, and largely of plywood; (2) the back of built-up wood, including the plywood wrest plank; (3) the piano action, an intricate combination of levers, intermediate between the strings and the keys, which transmit the impulse of the player's fingers to the hammers which strike the strings; (4) the sounding board of carefully selected quarter sawn spruce; and (5) the keys or keyboard, 88 in number, which must instantly re-

Figure 1. Baldwin grand piano which is used by Boston Symphony orchestra.

Figure 2. Baby grand Baldwin piano.

Figure 3. Low upright by Baldwin Piano Company.

spond to the player's touch. The action has as many operating units as there are keys. The action parts, largely from selected hard maple, are machined with extreme accuracy. The keyboard is chiefly of selected white pine, with the visible portion faced with ivory, or some acceptable alternate for pianos in the modest price ranges.

Plywood renders its greatest service to the piano maker in the upright and grand piano cases and in the wrest planks, in which the tuning pins are embedded for regulating the tension of the piano wires. These features will be illustrated and described in some detail.

Upright Piano Cases

The upright piano case is a marvel of fine workmanship in wood. Pianos are a life-time investment for most families, and their construction must be designed to withstand the many vicissitudes of family life. This includes movings, often up and down stairs, as well as a wide range of temperature and atmospheric changes. Pianos are clumsy and heavy to handle and examples of careful and considerate handling are all too rare.

An "exploded" sketch of the parts of an upright piano case, with usual nomenclature, is shown in Fig. 4, which is the same piano as illustrated in Fig. 3. All of the flat parts are of plywood construction, with lumber cores, while solid wood of the appropriate species is provided for such items as legs, moldings and narrow strips. Fabrication of these plywood parts is by the hot press method, see Fig. 5, using a highly water resistant urea resin adhesive, that guards against delamination in warm moist climates. A piano may be shipped anywhere, from the Arctic to a Tropical climate, and its construction must be adequate to meet such extreme conditions. Several parts of the piano back require thicknesses of 4" or more, and these are laminated from 4/4, 6/4 and 8/4 lumber. This laminating press can be noted at the deep right of Fig. 5.

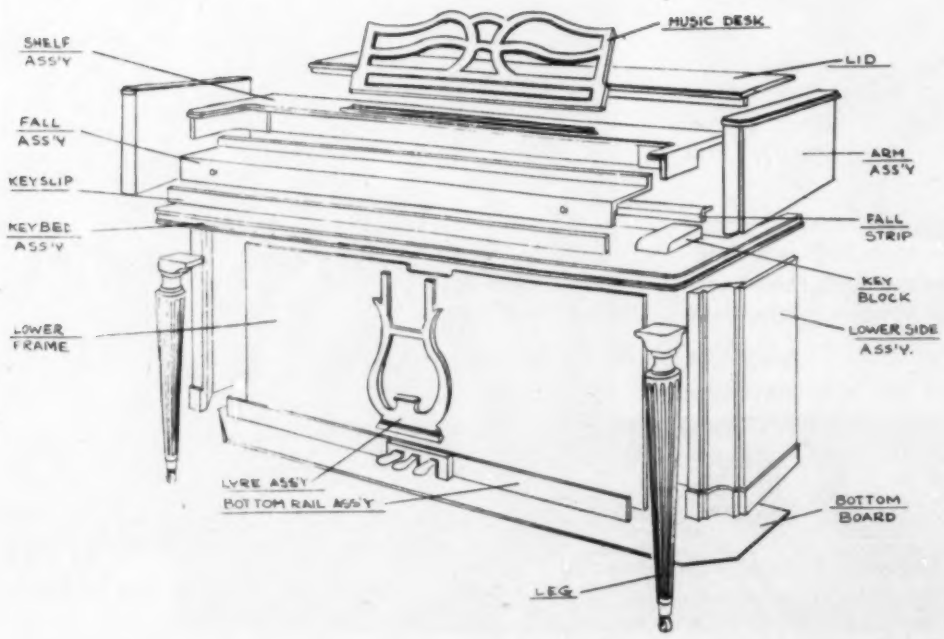

Figure 4. Exploded section of upright piano case.

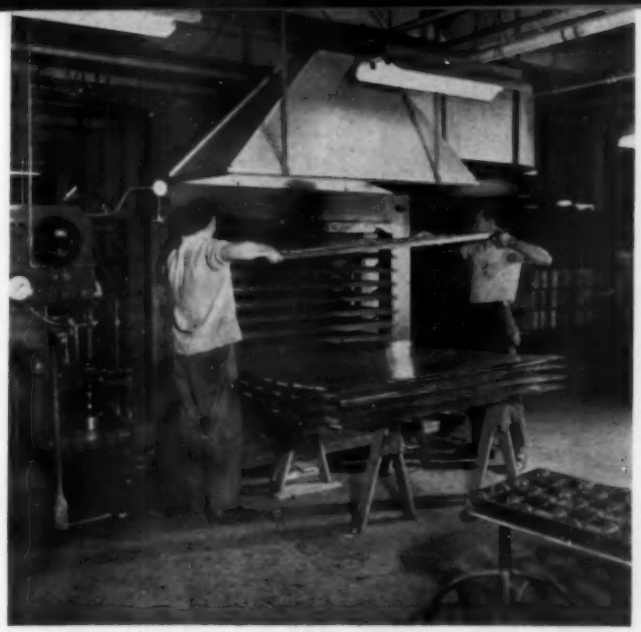

Figure 5. Hot pressing plywood for piano cases with a Plycor hot press.

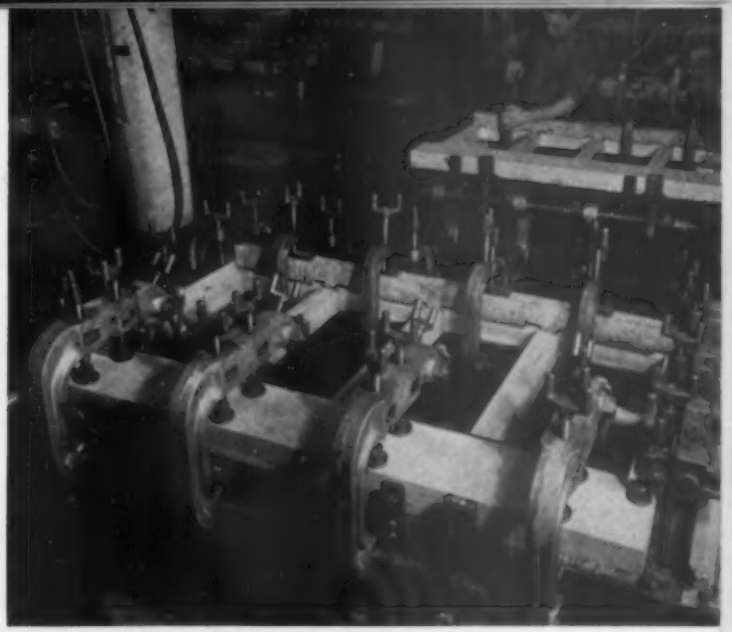

Figure 7. Assembling the back which carries the load.

The plywood is trimmed after gluing by conventional methods. Particular attention is given to sanding, to achieve maximum smoothness, which will reflect the beauty of the wood, and permit attractive and durable finishes. Drum sanding is followed by belt sanding which gives the best results and its use is illustrated in Fig. 6.

There are many sub-assemblies that precede the final case assembly. Several of them are sliding parts, such as the shelf and fall assembly, which must move in and out with ease, and yet protect the interior parts from dust when the piano is not in use and the case is closed. The lid, shelf assembly, and fall assembly are removable to permit access to the tuning pins located directly behind them. All finish coatings are applied before the case and back are fully assembled.

Upright Piano Backs

The piano back carries the entire load of the tensioned strings, and must be extremely sturdy to withstand the aggregate strain of the strings, amounting to many tons. It is a grid framework of laminated lumber, thoroughly braced against any yielding, which, if it occurred, would interfere with keeping the piano "in tune." These backs are assembled in clamp jigs, illustrated in Fig. 7. There are clamps in every direction, which must be tightened in a given sequence so that all parts are rigidly interlocked. Joints are mortise and tenon and thoroughly glued. After removal from the clamps the back is accurately trimmed on four sides on an automatic shaper, which smoothly cuts end and side wood with equal facility.

The shaper in Fig. 8 is set for a rectangular back for upright pianos, but can be adjusted, readily, for any curved parts required in grand pianos. The trimmed back, shown standing upside down at the right in this photo, shows clearly the laminated cross braces, the recess in which the sounding board assembly is set, and below, next to the floor, is the wrest plank, to be drilled for the tuning pins. The

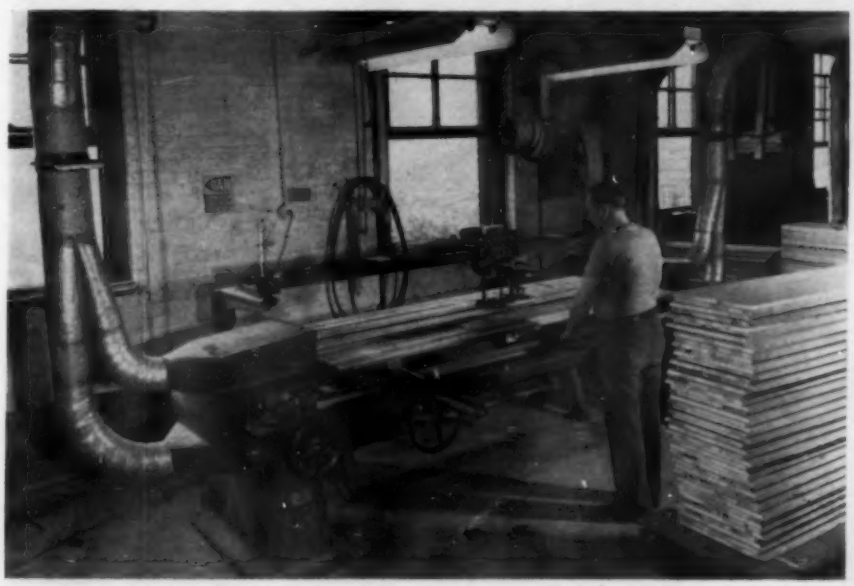

Figure 6. Belt sanding.

Figure 8. Trimming the back on an Onsrud automatic shaper.

long turned handles, for lifting the piano, can be noted inside each end.

The spruce sounding board, edge glued from narrow strips of quarter sawn spruce, is provided with ribs or stiffeners, glued to the side opposite to the metal plate. These ribs are attached in diagonal positions by means of the clamping mechanism shown in Fig. 9. The bed of this clamp is steam heated to accelerate the cure of the adhesive. The ribs are accurately located by notches at the edges of the steam table.

The final assembly of the back, sounding board, plate with strings, and the case parts is done on a roller conveyor, as shown in Fig. 10. The loading station is at the left under the extended arm of the workman. From that station, where the plate is bolted to the back, each unit moves counter clockwise, and parts of the case are added at each station. The sides and legs are attached at the turntable section, in the foreground of the photo and not shown. Next follows the key bed assembly and so on up the right side of the conveyor. Each part is firmly screwed in place, with the necessary powered hand tools hung on a rack behind each working station. The various parts to be attached are stored behind each station. The last of some 15 stations, where the pedals and trap levers are installed, is at the left, just above the loading station. The case is now complete, except for the parts above the key bed, which are installed with the actions and keys. Particular attention is given to finish coatings, which are spray applied, and are especially selected for many years of durability under hard service.

Figure 9. Gluing ribs to an upright sounding board.

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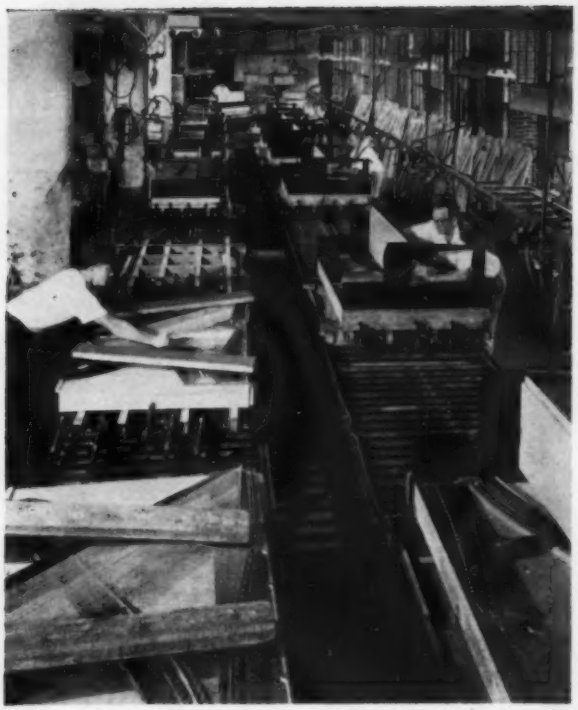

Figure 10. Conveyor for case and back assembly.

Plywood Wrest Planks

One of the most interesting parts of a piano, from a plywood standpoint, is the wrest plank, often called pin plank or pin block, in which the tuning pins are embedded. These tuning pins must be tight enough to maintain the tension of the strings with no slippage, and yet not so tight as to interfere with turning the pins with a tuning hammer at each tuning period.

A piano pin blank is the first recorded instance of the use of glued cross layers of wood, which is now called plywood. It dates back to the decade of the 1830's and with varying designs has been used in pianos up to the present time. This may be a convincing demonstration of the dimensional stability of plywood, so far as the size of holes is concerned. It is surprising to note how well plywood wrest planks have stood up over the last 100 years and more.

Two types of plywood pin block construction are shown in the sketches of Fig. 11. Wrest planks are customarily some 40" to 60" long by 8" wide and approximately 1⅛" thick. Both of these constructions have been widely used, the 9-ply construction of ⅛" sawn maple veneer; and the 5-ply, with three central layers of hard maple lumber resawn to about 5/16" thick.

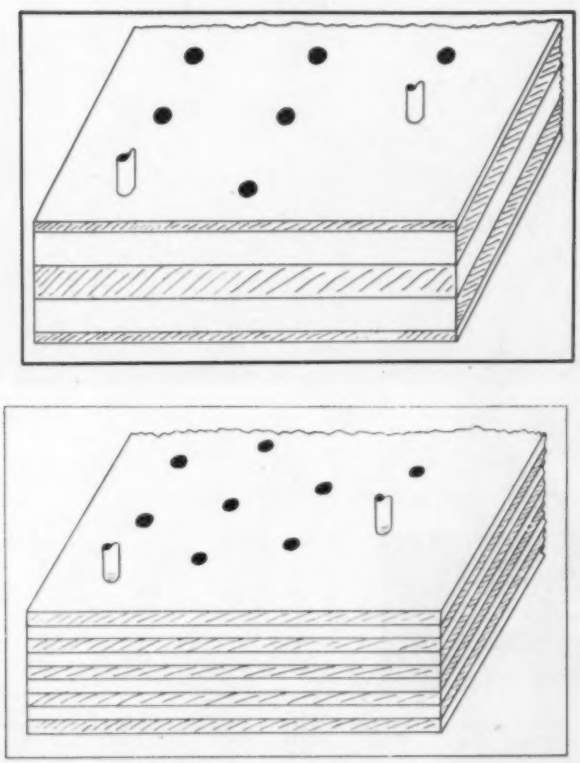

Figure 11. Two types of plywood wrest planks.

Perhaps the best explanation of the gripping action of the wood on the shank of the pin is that the wood fibers in the circumference of the drilled hole are sheared off by the cutting edges of the drill, leaving holes with relatively smooth interior walls. The diameter of the hole is somewhat less than that of the pin as it is driven into the wood. The shank

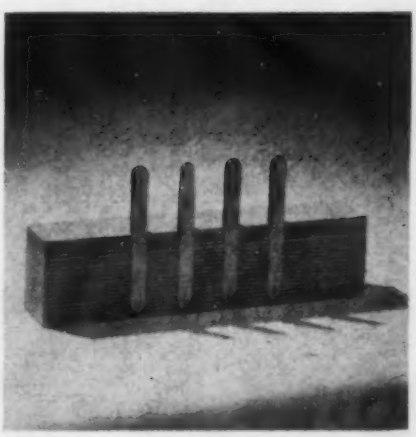

Figure 12. Improved wrest plank design which was developed by research. This design is patented in the United States.

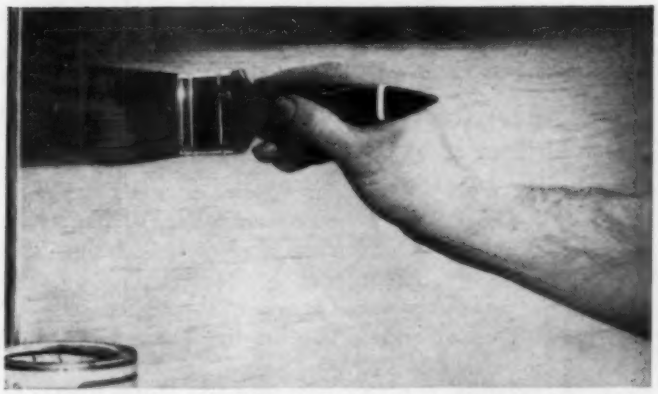

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Figure 13. Spreading the adhesive with a Black Brothers spreader.

Figure 14. Press for grand piano rims.

of the pin is provided with very fine threads, some 80 to the inch, so that several turns of the tuning hammer will not move the pin, in or out, more than a short distance and thus maintain the leverage of the wire tension within narrow limits. The threaded shank of the pin is surrounded with slightly bent wood fibers, impinging on the threads and producing enough friction to keep the pin reasonably tight, except when turned by the tuning hammer. This is due to the fact that the pin is slightly larger than the drilled hole.

Obviously, solid wood, as contrasted with plywood, would have these impinging fibers on only two sides of the pin, while in plywood they are all around the shank of the pin. In addition, solid wood would be inclined to split, and any shrinking or swelling would change the size and shape of the drilled hole.

Baldwin Wrest Plank Research

However, the wrest planks made under the construction shown in Fig. 11, left something to be desired in maintaining uniform tension in piano strings, particularly in concert grand pianos tuned to a high concert pitch, and subject to much moving and hard use. As a result, the Baldwin Piano Company undertook a research project to discover, if possible, what improvements in the design and construction of wrest planks would permit more stable tuning with less variations in the tension of piano wires.

In the course of this research the effect of several variables was explored, the more important variables were:

1. Size of the hole drilled for a standard pin, .281" diameter.
2. Effect of sharp or dull drills.
3. Thickness of individual plywood layers.
4. Ultimate density, or specific gravity, of the wood and resin adhesive combination.
5. Effect of curing the adhesive under substantial heat, in contrast to cure at room temperatures.

Certain facts were well established and known, viz.:

6. A tuning torque over 300 inch pounds approached the torsional breaking point of the pin.
7. Torques under 35 resulted in "loose" pins, and 50 was considered marginal.
8. Wrest planks in service may vary from 16% to 3½% in moisture content.
9. The density of normal hard maple averages about .62.

Combining and relating these variables in the face of the facts, led to the following conclusions, as to the optimum block construction and drilling techniques:

10. Required density or specific gravity range from .72 to .87.
11. Required thicknesses of individual plywood layers, ⅛" to 1/28".
12. Hot pressed phenolic resin adhesives were found preferable.
13. Sharp drills, between .260 and .274" diameter (92½% to 97½% of pin diameter) provide the best grip between the wood and the pins, within a satisfactory torque range.

14. Three cyclic tests, between 16% and 3½% M. C., seem to establish a stability in torque, which thereafter changes little.
15. Torque results in actual use —see conclusions 10 to 14— can be expected to range from 50 to 100 inch pounds.

This analysis of the research project, while of distinct value in piano wrest planks, is even more important in demonstrating the value of applied research in wood products. It should stimulate other woodworkers to undertake such research on their own products.

As a result of this research program the pin block construction illustrated in Fig. 12 was adopted for grand piano wrest planks. This is made of 41 plies of 1/28" hard maple veneer, hot pressed with a phenolic resin adhesive, under 200 lbs. specific pressure, which compressed the assembly ⅛" or about 8% in thickness. Holes were bored with a .266" diameter sharp drill. The final stabilized torque, after three cyclic tests, ranged from 80 to 105 inch pounds, with an average of 85-90.

Grand Piano Cases

The grand piano case differs markedly from its upright counterpart, chiefly in the curved rim of laminated veneer and in the large liftable lid, which must be perfectly flat.

The bending of this curved rim is an interesting process. It is not plywood in the strict sense of the term, since the only cross layers consist of cross bands between the laminated cores and the outside face veneers. Nevertheless it is a job well adapted to the plywood factory. Grand pianos, with such curved veneer rims, antedating the Civil War, are still found to be in useful condition.

The veneers for the inner layers of these rims are 3/16" sawn maple, planed to remove the saw marks. The outer layer is of 1/28" mahogany, walnut or other decorative species. The adhesive is a urea resin type, catalyzed to harden at room temperatures, to which enough pigment is added to mask the minor "bleed through," which might impair the finish. The spreading of the adhesive on the rim veneers is shown in Fig. 13, using grooved rubber rollers. The assembly of 6-8 veneers is laid up of freshly spread veneers and wrapped around the center of the rim press, shown in Fig. 14. The outer segment of the rim press, standing in the rear, is placed outside of the veneer assembly and tightly clamped in place, maintaining the pressure for several hours until the adhesive has hardened.

A complete curved grand rim consists of an outer section, exposed in the finished piano, and a lower inside section, out of sight, which supports the metal plate and sounding board. The darker colored wide rims in this photo, are outer rims, and the narrower lighter colored rims are the lower inside supporting rims. They are glued together in the same clamp in a second gluing operation. The empty rim press in the foreground shows a lower recess in which these supporting rims are curved and glued.

After removal from the rim clamps, it is necessary to temper these curved rims in an air conditioned room, as illustrated in Fig. 15. Both inner and outer rims are shown in this photo, as well as some which have been glued together. In this tempering process the surplus glue solvent is evaporated, requiring about two weeks. At the end of that time, the curves,

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Figure 15. Tempering the glued-up grand rims.

Fig. 16. Matched face veneers for grand piano lids.

which may have opened a trifle, are found to be stabilized as to shape and are ready for the final assembly.

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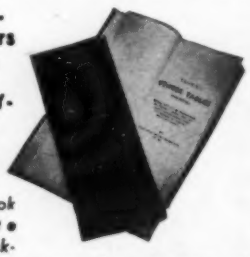

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The lid of a grand piano, which is of substantial area, requires unusual flatness. This is accomplished by making the lumber core of narrow (2″) strips of quarter sawn poplar, which satisfactorily neutralizes any warping tendencies. The photo in Fig. 16 shows face veneers for grand piano lids, carefully matched for figure and liberally reinforced with gummed tape to reduce breakage in handling. After curing these 5-ply constructions in the hot press, using resin adhesives, the plywood lids are piled solid, with interlayers of metal cauls to accelerate their cooling to room temperature. This accelerated cooling under pressure, does much to preserve the flatness of the plywood lids.

Conclusions

While this outline of plywood utilizations in piano construction must necessarily be very sketchy, it does clearly demonstrate that the making of high grade pianos requires ingenuity and superb craftsmanship, based on the established traditions of the piano making industry. It also proves that, even in an old industry, abounding in traditional methods, modern research techniques can be very valuable. Improvements can be developed which add substantially to the quality of the ultimate product.

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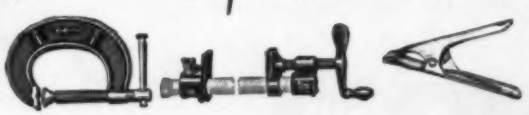

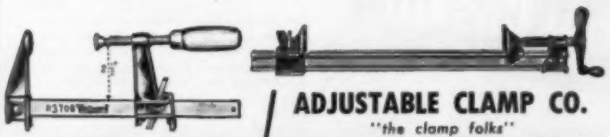

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EDGE GLUED REDWOOD CORES

A tough problem faces furniture men today in the procurement of proper core stock for furniture panels. Redwood has recently come to the fore for use as cores in fine cabinet work. Here is why.

By John Reno

Utilization Director

The Pacific Lumber Company

Wurlitzer spinet piano. For the last three years this firm has been using redwood cores in the manufacture of one of the world's best known pianos.

This report covers more than seven years of practical experience and about two years of research work done at the Forest Products Laboratory, Madison, Wisconsin. All of this work has been directed toward developing information about the use of redwood cores in furniture panels. As a result of extensive tests, vertical grain redwood has been found to compare more than favorably with yellow poplar in the production of panels with smooth faces without noticeable warpage or glue line telegraphing.

Investigation has also disclosed that the use of A and "Better" redwood cores has been a great money saver for furniture manufacturers and plants making panels.

Need For Tests

As is often true, "Necessity is the mother of invention," and because there has been a definite need to augment the supply of lumber suitable for lumber cores for high class furniture panels, there have also been a number of investigations into the merits of various species of wood and other materials for this purpose. Because the properties of redwood conform with many of the requirements of good core material, the Forest Products Laboratory, in cooperation with the Pacific Lumber Company, Scotia, California, undertook to determine if redwood met all the essentials of a top-notch lumber core.

The experimental study undertaken at the Forest Products Laboratory, under the direction of Edward C. Peck and M. L. Selbo, was planned to develop information as follows:

- Comparison of two much-used species of core lumber for high quality five-ply panels.
- Comparison of redwood cores of various constructions with respect to flat and vertical grain, all heartwood, mixed heartwood and sapwood.
- Comparison of cores made of strips and boards from 2" to 10" wide.
- Comparison of hot-pressed and cold-pressed panels made with redwood cores.

Redwood was considered because of the following advantages:

- Most stable of American commercial woods.[1]

● ● ●

The same fine properties that make redwood superior for furniture cores also cause it to be ideal for other panel work.

● ● ●

- Shrinks and swells less than any other commercial wood in response to moisture changes.
- Less chance of warpage in panels with redwood cores.
- Position in top class as one of the woods which glues easiest.[2]

There are two reports on redwood that are available from the Forest Products Laboratory, Madison 5, Wisconsin. One is No. 1785, "Comparison of Redwood and Flat-Grained Yellow Poplar for Cores in Furniture Panels," and the second, No. R1755, "Shaping the End Grain of Redwood for Core Stock." Basic information included in this article receives further explanation and expansion in these two reports. The second report, No. R1755, discloses that the end grain of redwood shapes even better than does yellow poplar. This report includes recommended shaper speeds, knife grinding, etc.

Research on Redwood

Yellow poplar has generally been used for lumber cores in better quality furniture panels. Therefore, this species was chosen as the one with which to compare redwood in these tests. Seventy-six 5-ply panels with yellow poplar crossbands and birch face veneers were constructed with redwood and with poplar cores. Vertical grain and flat grain redwood cores made with boards of various widths—2" to 10"—were compared with flat grain yellow poplar cores built with 2"

[1] "The Wood Handbook" of the U.S. Department of Agriculture, Rev., 1940, Page 196.
[2] ibid., Page 169.

Redwood panel—edge glued, vertical grain redwood.

and 4" strips. Both redwood and yellow poplar were dried to 7% m.c. before being edge glued, and after gluing were reconditioned to this same moisture content before crossbands were applied.

The panels were constructed of these ¾" edge glued cores conditioned to a moisture content of approximately 7%, and 1/20" yellow poplar cross bands and 1/28" birch face veneers conditioned to a moisture content of 4%. After the crossbands and face veneers were glued on, the panels were again reconditioned to 7% moisture content. The panels were assembled in two ways: some by the hot press method and some by cold press gluing.

After weighing and measuring for width, length, and thickness, as well as for cup in width and for bow in length, and for twist, they were shipped to a furniture factory for sanding, staining or bleaching, and finishing. The panels were returned to the laboratory, weighed and measured, and placed in a conditioning chamber whose temperature and relative humidity were adjusted to obtain a wood moisture content of 6%. After reaching this moisture content, the panels were weighed and measured and placed in a room with controlled humidity until their moisture content was about 10%. After being weighed and measured at this moisture content, the panels were again brought to 6%. These fluctuations in moisture content represent about what can be expected under normal use conditions.

The panels were placed on edge within a rack in the conditioning chambers, so that they were free to swell or shrink, and warp. At 10% and at the final 6% equilibrium moisture content, the top face of each panel was viewed for surface irregularities by directing a beam of light along the panel at a small angle with the face. A white background was used to make the depressions and ridges more easily observed. The faces were observed critically to judge their comparative quality as first class furniture panels.

Results of Tests

- The panels which remained the flattest and smoothest were those made with cores of vertical grain redwood boards 8" and 10" in width.
- Also, vertical grain redwood boards 4" to 10" in width produced flatter panels than those made with cores of yellow poplar strips, and had equally smooth or smoother faces.
- Panels made with flat grain redwood remained flatter than those made with poplar cores, but the

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faces were not so smooth. More ridges and grooves developed in the panels with the flat grain redwood cores than those made with yellow poplar cores or vertical grain redwood.

- Panels made with hot or cold presses remained approximately equally flat.
- Flat grain redwood, either with or without sapwood, is suitable for cores for panels on which ridges and grooves of varying magnitudes are not objectionable.
- Panels made on the hot press had higher quality ratings, based on face ridges and grooves.
- Panels made on the cold press had lower quality ratings, based on face ridges and grooves. However, the difference is not important from a commercial standpoint.

These tests confirmed commercial experience that the best core is made with vertical grain redwood boards.

Commercial Experience

Redwood has been utilized as core stock for hardwood furniture panels for more than 30 years, although during this period the redwood used was not specifically produced for core purposes.

Home model Hammond organ. Redwood cores are used for the veneered panels in this beautiful instrument.

During the approximately two years that the Forest Products Laboratory conducted its redwood core research and then subsequently for a total of ten years to date, a manufacturer of America's finest organs had proceeded on his own volition and was procuring vertical grain, edge glued redwood lumber cores from the Pacific Lumber Company to the extent of millions of feet. These cores, including more than one hundred thousand ranging in size from 36" to 72" by 33", were placed in the most critical of panels in this manufacturer's line and have given amazingly satisfactory results: not one piece of furniture rejected or returned because of complaint due to the performance of the redwood core. Needless to say, this pioneer in the utilization of redwood for this purpose is still a steady user.

For the past three years, the manufacturer of one of the nation's finest pianos has been using Palco edge glued redwood cores with equally excellent results. In the summer of 1956, another noted

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name in furniture manufacturing joined the growing list of converts to Palco cores.

Future Utilization

The Pacific Lumber Company brands its cores of selected vertical grain, straight grain redwood, fabricated expressly for top grade furniture. In this way purchasers are certain that they are getting the redwood best suited for core use. The redwood used for core production is kiln dried before edge gluing. However, it is realized that moisture will be picked up during fabrication and shipment. Accordingly, the company recommends that the cores be redried to about 6% m.c., just prior to assembling them into panels. Moisture contents below 6% are neither recommended nor needed. Another strong recommendation is that the core be surfaced within 24, or at most 48 hours before applying the crossbands as is common practice in furniture production.

For those furniture manufacturers who have their own core cut-up departments and edge gluers, the Pacific Lumber Company has made available, within the limits of production capacity, kiln dried, vertical grain, straight grain redwood lumber, especially selected for texture for core purposes and shipped rough, with redrying and surfacing to be done by the customer. This stock is stamped "Palco Furniture Core Stock" to distinguish it from redwood selected for other purposes and to insure the customer against using redwood unsuitable for cores.

The quantity of lumber of the exacting quality required for cores and core stock is limited, but every effort has been made and will be made to make it available to furniture manufacturers needing particularly stable and smooth cores. Similarly selected flat grain, straight grain redwood cores and lumber is being produced for lamination into blocks for band sawing into serpentine drawer fronts and similar units. This procedure results in drawer front cores of edge glued, vertical grain redwood strips—the best at an economical price.

Gluing Procedure

Assembled cores are edge glued under electronic high frequency heat with a highly water-resistant urea formaldehyde synthetic resin glue. Strips and boards in each core are full length of the core, although the Pacific Lumber Company has installed equipment to join lumber endwise—making long ones out of short ones—with finger joints with urea resin glue set electronically. This stock has been glued edgewise to core sizes and tests have determined that it is suitable for use in furniture panels.

Presently, core thickness is restricted to 1" stock, although provisions to enable the manufacture of 1¼" thickness for cores for desk tops are under consideration. At the moment the maximum sizes that can be produced are 48" x 96"

SPECIFY BEACH PANEL SIZING SAW

• *arbor accommodates as many saw blades, dado heads or groovers as required*

• *rips panels of any length into strips of any width . . . can dado, groove simultaneously*

The Beach Panel Sizing Saw is specially designed for safer, more accurate, more economical multiple precision ripping, dadoing, grooving.

It can be easily, quickly adjusted to the requirements of a job; blades may be added to, or removed from the arbor without tearing down the machine! A double set of power-driven feed rolls prevents creeping or kicking back. Several standard size models; maximum cutting widths of 24" to 54" Special sizes available.

TILTING TABLE SAW

DOUBLE CUT-OFF SAW

SHAPER

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SPLICED VENEER
Every GOOD GRADE is here
Every GRADE here is GOOD
LUMBER

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Northern Hardwood Veneers, Inc.
Butternut, Wisconsin

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when S1S ⅞" hit or miss, 35⅛" x 96" when S2S, and 34" x 96" when S4S.

The lumber to be utilized for cores and core stock is wedged on the head rig to be sawn parallel to the bark, rather than to the pith, to produce straight grain lumber lengthwise—a vital consideration for core stock.

Many furniture manufacturers have welcomed the entry of California redwood into the lumber core field to fill the need being caused by the ever lessening supply of suitable yellow poplar. Users of wide panels for other purposes are also viewing this redwood development with interest and satisfaction.

"No, not that one—the one above it!"

Particle Board Properties. The characteristics and properties of various wood particle boards are given. Included are variances in specific gravity, bending strength, dimensional stability, and other properties affecting their machining and use with nails, screws, and glue.

Timber Engineering Company, 1319-18th Street, N.W., Washington 6, D.C., request "Wood Research," No. 28.

Use postpaid card. Circle No. 5

Super Cleaning of Atmospheric Air. The super cleaning of ordinary atmospheric air by means of specially adapted industrial cloth-filter-type dust collectors is the subject of this bulletin. The bulletin has two case histories of installations where this process is used for cleaning dust out of ordinary city or country air. Ultra-filtration is applicable to the cleaning of cooling air for electrical motor and generator rooms, transformer rooms, control rooms, and other enclosures in which heat generating electrical equipment is located.

Wheelabrator Corporation, Mishawaka, Indiana.

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QUICK ACTING DEEP ENGAGEMENT CLAMPS made for long hard usage are sturdily constructed representing efficiency and economy. The deep cut ACME THREADED screws are made of cold drawn steel. The wood handles are made to fit the hand. The locking device instantly locks when pressure is applied and will not slip or stick. Hammering or other vibration will not loosen the locking device.

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THE **PARKS** No. 20
20" Thickness PLANER

A modernly designed, low-priced, high-speed 20" x 6" planer that meets the surfacing needs of every type of woodworking shop. Ruggedly built for vibrationless operation—assuring quality work, increased production and low operating costs. Provides two feed speeds—20 and 40 F.P.M. or 40 and 80 F.P.M. Four-knife cutterhead has speed of 3600 R.P.M. Available with knife-grinding attachment at additional cost.

COMPLETE DESCRIPTIVE LITERATURE ON REQUEST.

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A compact, sturdy machine that offers mill planer precision and ruggedness at a sensationally low price. A real heavy-duty 12" x 4" planer that can pay for itself. Write for descriptive catalog sheet.

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Binks Model 18 spray guns help keep finish rejects at an all time low... boost Bergsma sales to an all time high.

Bergsma Bros. select

Binks Model 18 spray guns for fine furniture finishing

Producing fine furniture lines such as Calvin and Paul McCobb calls for skilled craftsmanship plus equipment that permits a full expression of this craftsmanship. Bergsma Brothers of Grand Rapids, Mich., is well equipped on both counts. Skilled labor using the most modern woodworking machinery unites quality and high production.

Select Binks Model 18 Spray Gun

On the conveyorized finish line you will find Binks Model 18 spray guns in use. These spray guns are gluttons for work and are dependable in performance. The comfortable pistol grip lessens operator fatigue and convenient controls permit easy adjustment of the spray pattern for each finishing requirement.

Ask your Binks distributor

to show you the Model 18 spray gun. Better yet, ask him about Binks complete line of spray finishing and coating equipment. You will find that everything you will ever need is among the 1100 items in the line. They are all shown in Binks Catalog 956. Ask for a copy or write direct to the address below.

P.S. Service or parts for Binks equipment is always as near as your phone.

Ask about our spray painting school
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EVERYTHING FOR
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Literature For Finishing Rooms

Cost Estimating for Wood Industries. The prime objectives of this guide are to provide means for making early estimates of plant costs, operating costs, and profits from new products or processes in the wood product industries. It covers the operating costs for materials, utilities, labor investment, selling and management.

An attempt has been made to show the procedure and techniques involved, using quick estimating factors, in preparing estimates of total plant cost, operating costs and probable return on investment.

This guide is divided into two parts. The first is about estimating methods and the second gives necessary information about estimating tools. A selected bibliography is included for those who wish more additional information. Larry Coolidge and Jack R. Pfeiffer, co-writers, worked together to compile this guide. After studying methods developed in estimating costs for chemical and other industries they were led to devise similar methods for plants designed for processing wood. The guide is not intended as a substitute for detailed analysis and plans necessary for actual construction of a plant but is meant to be a convenient and powerful tool for judging economic possibilities of a projected process or product.

Ask for Information Circular No. 9 from Oregon Forest Products Laboratory, Corvallis, Oregon.

Use postpaid card. Circle No. 7

Natural Exterior Finishes. This 4-page supplement to the Redwood Data Sheet 4B3-1 lists the tested products which have passed the association's standards for ease of maintenance and minimum durability.

Service Library, California Redwood Association, 576 Sacramento Street, San Francisco 11, California.

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Directory of Designers. The directory contains the names of more than 200 free lance furniture designers with 815 individual classifications, according to the type of furniture designed. Each listing shows the type and style of product designed, the names of manufacturers the designer has worked for and the length of time he has been engaged in the field.

National Association of Furniture Manufacturers, 666 Lake Shore Drive, Chicago 11, Illinois.

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Dichrotone. These pigmented toners are available in a wide range of colors and in a variety of forms to meet the needs of the production lines and color requirements desired. Ask for bulletin 2-1956.

Technical Service, Glidden Company, Third & Bern Streets, Reading, Pa.

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(Continued on page 75.)

finishing section

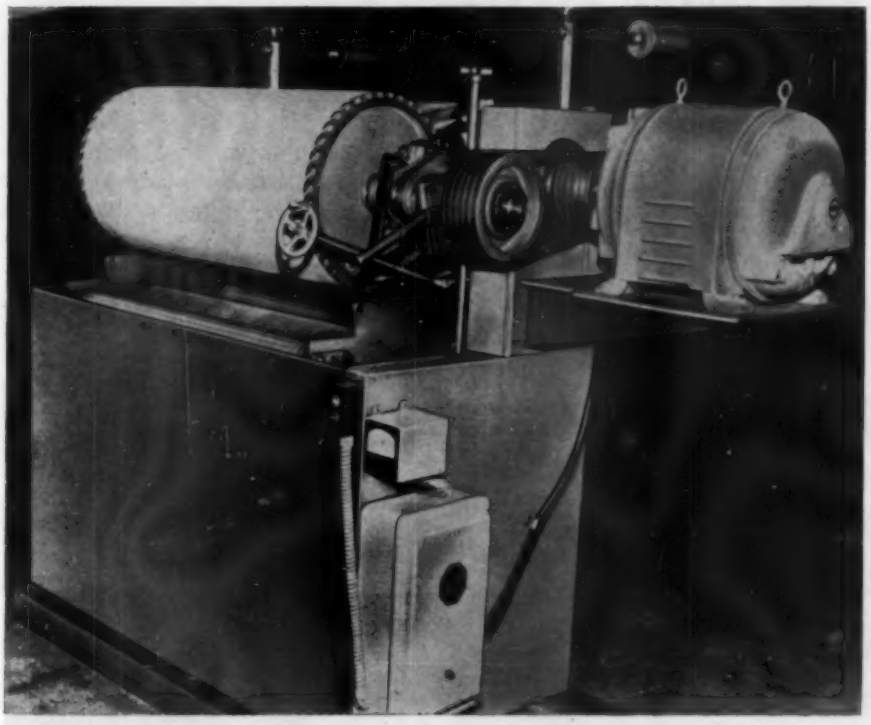
SANDING SEALER BY MACHINE NOW A REALITY

Controlled precision sanding of wood virtually received a shot in the arm with the successful demonstration of the radically new sanding machine developed by Timesaver, Inc. at the Minnesota Mining and Manufacturing Company plant at High Point, North Carolina, December 3. The machine demonstrates that the impossible is possible if the correct approach is found.

For example, sanding sealer by machine (other than hand tools) has been looked upon as far fetched as sanding the craters on the moon. But the new Speedsaver, as it is called, in combination with a new type sanding belt developed by Minnesota Mining and Manufacturing Company for the express purpose of high speed machine sanding of sealer did the trick. So amazingly well did the machine perform that a wall paneling manufacturer ordered three on the spot after running samples through the machine and observing its possibilities.

The fact that the machine has a separate feed speed motor, capable of pushing stock through the machine from 35 to 80 f.p.m. accounts for its unlimited possibilities in a straight line operation on flat stock. For example, wall paneling that is run through a conveyorized finishing line need not be touched by hand till finished. Progressing through the staining, filling, and forced drying, it can be fed directly to the Speedsaver for sanding after filling. Automatic spraying of sealer followed by forced drying, the panels can be fed directly to a second Speedsaver for sanding sealer.

After watching the machine operate on various types of stock in the white, two things appeared quite obvious to the experienced woodworker. First, the machine is not a cure for poorly manufactured stock. Panels that have sunken joints, are twisted and warped, either sand through or come through the machine unsanded in low spots. These types of panels will continue to be sanded best on a stroke sander.



T-O-P belt sander, sands and polishes. Machine has been developed by Timesaver, Inc.

PHOTO: Courtesy Minnesota Mining and Mfg. Co.

Clifford A. Baker, a technical service supervisor for Minnesota Mining and Manufacturing Co., St. Paul, Minn., removes a coated abrasive belt from the model T.O.P. Speedsander introduced to the woodworking and furniture industries in High Point, N.C., early in December. Nearly 50 firms in the High Point area submitted panels for finishing at the clinic.

Second, a superb sanding job in the white can be accomplished with one pass through the machine using 7/0 abrasive. However, unless previously leveled on a drum sander, panels were first run through the machine using 2/0 then polished with 7/0. An abrasive belt, two grits finer than that used on a stroke sander is recommended. Otherwise the quality of sanding falls below that obtained with a stroke polisher. When finished with stain, sealer and lacquer, the work matched the highest quality obtained on furniture panels using the best stroke polishing technique: no sander marks, "snake tracks," or biting was present.

A use for the machine was demonstrated as burnish sanding. Burnish sanding was accomplished with a third pass through the machine. The first sanding was with 2/0 for leveling. For the second pass, 7/0 was used to polish the work. The third sanding or burnish sanding was completed with a 10/0 belt. Examination of the results revealed a very highly polished board in the white. The cutting was performed with a Minnesota Mining and Manufacturing Company belt and at first glance the wood appeared to be sealed, sanded and waxed to a high degree of luster.

Advantages of this type of sanding cannot be evaluated in a general statement. However, there are possibilities to be explored since the actual labor of sanding with a Speedsaver are relatively minor compared to a stroke sanding operation.

Design Features

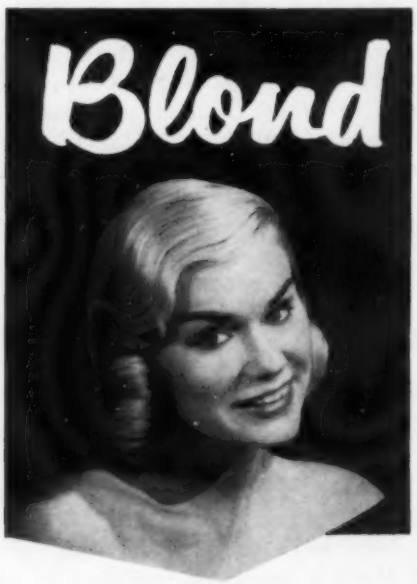
The machine is compact and ruggedly constructed and occupies little floor space for the large volume of work it can turn out.

Rubber covered infeed pinch rolls (one lower and one upper) provide positive feed and carry the work at speeds varying from 35 to 80 f.p.m. Two outfeed pinch rolls (two lower and two upper) remove the stock from the machine. A separate drive is used to power the feed rolls. The point of contact between the abrasive and work is through the large diameter, serrated rubber covered drive pulley.

Accuracy in sanding and long belt life is credited to this cool running serrated rubber covered pulley. The rubber covering can be furnished in any degree of hardness ranging from 20 to 95 durometers. In general, the softer grade is required for fine, accurate sanding.

How long does it take to change belts? This is a question often raised when new sanding machines are introduced. This factor is important from the standpoint of operating costs. A machine that requires as much downtime for belt changing as the productive time of sanding has a high maintenance cost and results in increased overhead and lost production.

A careful analysis of this question was made and a minimum time of two minutes was recorded for two men to remove the old belt and replace with a fresh one. The removal of a counterbalance and two bolts permit the operator to get at the belt. A patented belt tracking device is the secret of this short belt change time. It consists of two idle rolls mounted on a center swivel hanger and supplemented by two additional swivel tracking rolls.



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Dayco blond stains and finishes give uniform colors and tones with maximum penetration. Require no wiping or costly curing time. Dry quickly (1 hour), enable you to finish faster. Available in a wide range of smart colors. Let Dayco blond wood stains help *you* produce a more beautiful, easier to sell line.

Write for chips, testing samples and prices.

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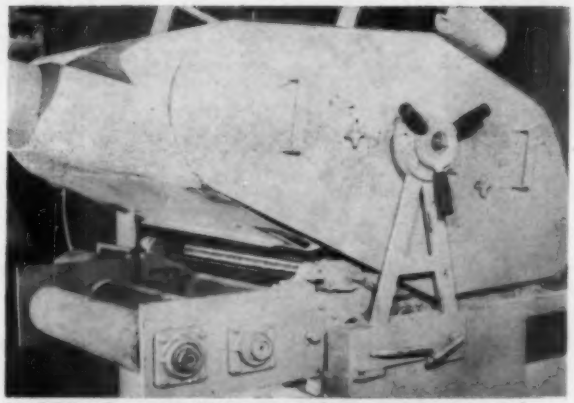

PHOTO: Courtesy Minnesota Mining and Mfg. Co.

Out end view of the T.O.P. Speedsander showing the three rubber covered feed rolls and brush for cleaning the surface of the sanded stock.

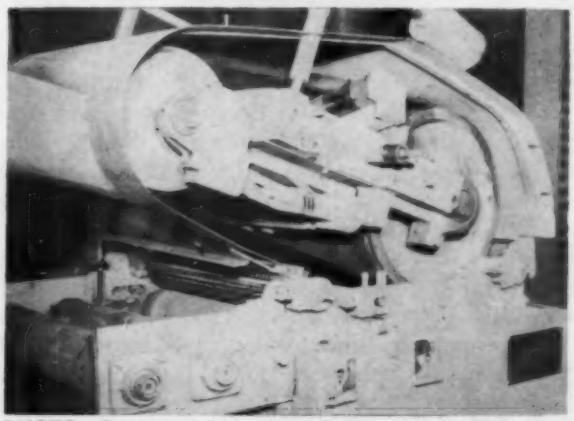

PHOTO: Courtesy Minnesota Mining and Mfg. Co.

The T.O.P. Speedsander with the belt guard removed showing serrated rubber covered contact pulley and idler pulley. Note the patented belt tracking devices for quickly aligning the belt.

The feed rolls as well as the belt pulley are dynamically balanced and mounted on extra heavy duty roller and ball bearings. The frame was heavy cast alloy with the motor mounted outbound for easy maintenance.

A double v-belt drive is used to transmit the power from motor to drive pulley. Presently the machine is made in 24", 40", and 52" width.

For the 24" machine a 5 h.p. motor is standard. However, the 40" machines are available with 10, 15, and 20 h.p. motors. The 52" machine can be secured with a choice of three size motors 20, 30, or 40 h.p.

Comet STOP GAUGES

For radial or swing saws. SAVE MONEY, time, labor and lumber. Stops are quickly put on or off without "threading" or removing bar. Finest made. Cost less. Write:

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FAMOWOOD . . . the AMAZING
ALL-PURPOSE PLASTIC for wood finishes!

Applies like putty . . . Sticks like glue!

FAMOWOOD is the answer . . . where wood finishes are important. Simple to use . . . efficient, lasting, time-saving, when filling wood cracks, gouges, nail and screw holes or correcting defects. Dries quickly, does not shrink. *Stays put* under adverse conditions.

FAMOWOOD sands easily, does not gum up sander. *Takes spirit dye stains freely.* Waterproof and weatherproof when properly applied. Ready to use—*"right out of the can."* Fifteen matching wood colors with matchless wood finishes.

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FAMOWOOD descriptive literature and price list on request.
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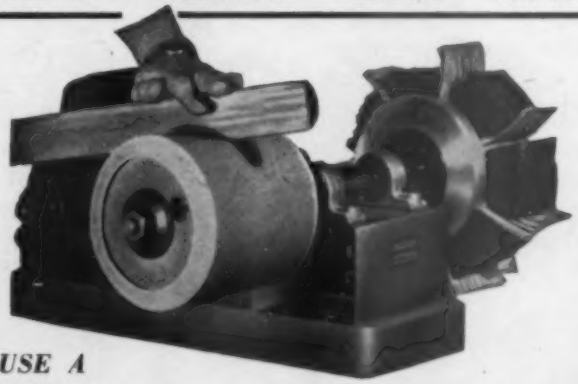
FASTER SANDING – LOWER COSTS



USE A

Sand-Rite "Duo" Sander

The "DUO" speeds up production at lower cost on:
- TOYS
- TABLE LEGS
- CHAIR LEGS
- CHAIR ARMS
- GUN STOCKS
- BRUSH HANDLES
- DISPLAY FIXTURES

Faster sanding & lower costs on all types of irregular shaped & rounded contour wood products. Eliminate costly hand sanding operations & maintain top quality finishes by using the "DUO" sander, a combination pneumatic drum and rotary brush sanding machine. Investigate the possibility of stepped up production in your shop.

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CHICAGO 10, ILLINOIS

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AIRLESS SPRAYING

Used To Finish Porch Shades

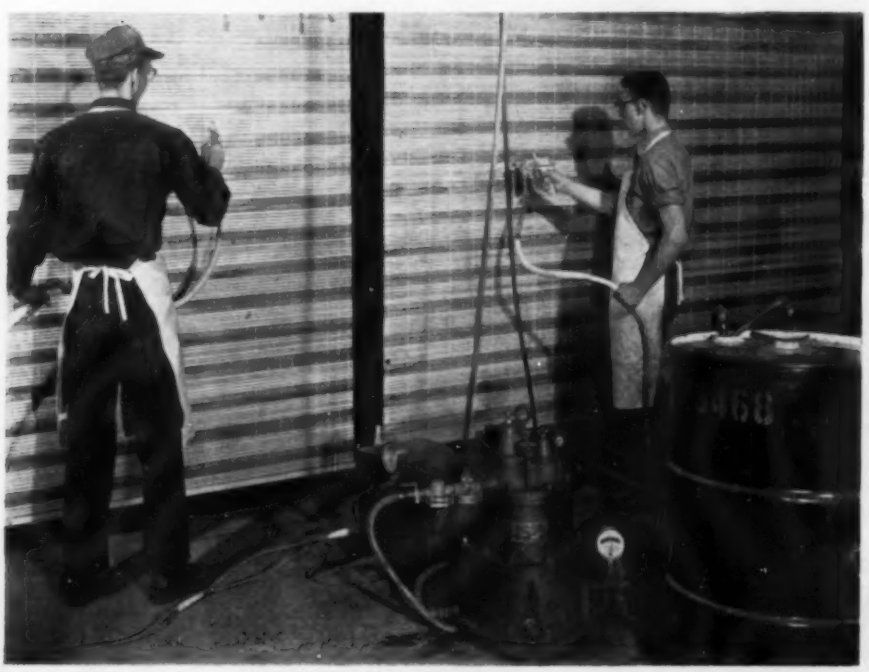
Close-up of airless spray apparatus.

A Wisconsin manufacturer is using an airless spray coating system to save time and materials. Albert R. Hough, vice-president of the Hough Manufacturing Corporation, Janesville, Wisconsin, says, "We find that the use of the airless spray coating system has resulted in a saving of finishing materials of approximately 20% while maintaining the same coating thickness on the product as formerly."

The Hough Manufacturing Corporation was established in 1900 as the Hough Porch Shade Company and began the manufacture of the first domestic porch shades. Regularly from its founding, new woven wood products have been added to the line and improvements made in the products being manufactured. Today Hough is one of the largest domestic manufacturers of woven wood basswood porch and window shades and floor screens. The company's products are sold through department stores, furniture stores, lumber yards, building specialty distributors, under the trademarked names: Vudor, Coolmor and Arbordale porch shades; Ra-Tox industrial shades; Belmar and Sunweave interior window shades and floor screens; and Ra-Tox Fashionfold doors. In 1955 the firm introduced the Hufcor accordion door.

Northern basswood rough lumber is received directly from leading northern sawmills. The wood is carefully selected, kiln dried, then sawed into splints of the proper size and sanded. The weaving of the fabric from the splints is done on looms especially designed for this purpose. Inspection and assembly precede spraying. Then the product is inspected for a final OK and packaged. Altogether more than eight quality inspection operations take place along the assembly route.

The Hough Corporation uses a specially formulated synthetic lacquer finish applied with the airless spray system over previously sealed basswood splint woven wood shades, screens and doors. The savings in ma-



Two operators doing airless spraying on porch shades. Sealer has been applied previously.

3M Production Paper Belts are always sharper!

Blindfolded stroke sander operator picks Production Paper belts 20 times out of 20!

Yes, in this actual test, a blindfolded operator was asked to feel the difference between 20 different Production Paper belts and a like number of ordinary stroke sanding belts. He found Production Paper belts *sharper* every time!

Production Paper belts *feel* sharper because they *are* sharper. Their *extra sharpness* guarantees you the best possible stroke sanding job, *if you let the belt do the work.* By this method you get more production with less effort, better finishes faster, and a higher rate of cut for the entire belt life.

EXAMPLE: a Production Paper belt used for 6 hours still *cut off* all the wood fibre fuzz from a test panel . . . ordinary paper belt merely ironed the fuzz down!

Remember, for best white-wood sanding, always use Production Paper belts . . . and be sure to specify 3M every time you order. For complete information, write for booklet, "3M System of Furniture Finishing".

The final finish mirrors all previous operations

3M ABRASIVES

PRODUCT OF 3M RESEARCH

Minnesota Mining & Mfg. Co.
Dept. HD-17, St. Paul 6, Minn.

☐ Send me the booklet "3M System For Sanding and Finishing Wood"

☐ I'd like to see the new 3M Woodworking Movie "It Goes with the Grain"

Name ..... Title.....

Company .....

Address .....

City ..... Zone... State.....

Made in U.S.A. by MINNESOTA MINING AND MFG. CO. General Offices: St. Paul 6, Minn. In Canada: P.O. Box 757, London, Ontario. Export Sales Office: 99 Park Avenue, New York City. Makers of "SCOTCH" Brand Pressure-Sensitive Tapes, "SCOTCH" Brand Magnetic Tape, "3M" Adhesives, "Underseal" Rubberized Coating, "SCOTCHLITE" Reflective Sheeting, "Safety-Walk" Nonslip Surfacing.

Use postpaid card. Circle No. 255

terial cost has been about 20%. Labor cost per unit is the same as the cost per unit with the former painting system. Increased production on a unit per hourly basis is still being studied and no figures are available. Additional information is available from Bede Products Corp., Amherst, Ohio.

Additional information is available from Bede Products Corp., Amherst, Ohio.

CARVINGS POLISHED WITH NEW BELT SANDER

A new spool sanding machine using coated abrasive belts is designed to polish carvings and other intricate contours. Developed by the carving room foreman of a large furniture factory, the Albright Master spool sander is being manufactured for the furniture and woodworking industries by the Albright Machine & Carving Works, Route 1, Valdese, N. C.

The machine uses 47" and 96" belts of widths ranging from ½" to 2", running over a natural rubber spool normally of 35 durometer hardness. Spools may be shaped to fit the work.

Belt tension is provided by a spring-backed backstand idler mounted on a vertical arm. The spool serves as the abrasive belt drive wheel. A small idler wheel above and forward of the contact wheel or spool controls tracking. It may be moved either laterally or forward and backward, then locked firmly in position with thumb screws when proper tracking is obtained.

The sander is 60" high, 72" wide and 36" deep. It is driven by a 2 h.p., 1750 r.p.m. motor to develop a belt speed of 2000 s.f.p.m., using an idler pulley 4" in diameter and 5½" wide. Commonly, a double-flexed cloth garnet finishing belt is specified; typical grit would be 120 (3/0).

Probable advantages of a belt over the DeLappe discs include cooler cutting, longer abrasive life, greatly increased production and sharply reduced down-time. For polishing long fluted pieces, the longer belt running over three idlers is desirable.

Tested in production, one of these machines spooled 170 front posts for cherry dressers in three hours.

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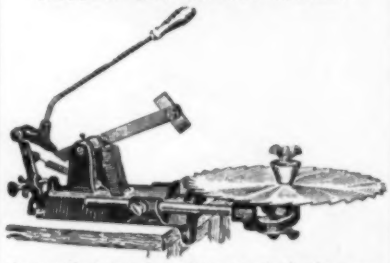
SIMPLEX
CIRCULAR SAW SETTING MACHINE



An excellent tool for setting small circular saws. The successful operation of all circular saws depends largely upon the manner in which they are fitted.

To obtain the best results the teeth should be properly and evenly set.

This machine does the work perfectly, insuring easy and true running and smooth cutting.

The hammer strikes every blow with equal force and at the same angle hence the set of each tooth is absolutely uniform. Will give a light, medium or heavy set.

Adjustable for saws, either rip or cut-off, from 5" to 24" in diameter.

The machine will last for years if handled with ordinary care and intelligence.

Further details upon request

ZEILLER & NAGEL, INC.
232 JAVA ST. BROOKLYN 22, N.Y.

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STANLEY
"SURFORM"®
A new kind of tool — does 1001 jobs!

SURFORM Plane type — $3.69

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Stanley *SURFORM* forms the surface of wood, plywood, floor tile, plastics, hard rubber, copper, aluminum — even mild steel. It's easy, it's fast, it's safe.

450 sharp edges work together!

This cutting strip is the secret of Stanley *SURFORM*. The holes take cuttings away from work. There is nothing to adjust. The depth of cut is automatically controlled.

Replacement blade fits both tools — 98¢

Stanley *SURFORM* is a money-saving, time-saving tool for 1001 industrial applications. Ask your distributor about Stanley *SURFORM*. Stanley Tools, Division of The Stanley Works, New Britain, Conn.

The Tool Box of the World

STANLEY

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For cleaning metal, wood and plastic surfaces before painting. Order today through your supplier.

DETRO SALES CO., INC., *Culver City, California*
Standard of the Finishing Industry Since 1934

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Adhesives. One new catalog of Government technical reports available to industry on adhesives has been compiled by the Office of Technical Services, U. S. Department of Commerce. The catalog lists 478 items in the Office of Technical Service collection. Reports listed are primarily the results of research done by the Government or by private laboratories working under government contract for the Army, Navy, Air Force, and other agencies, but also include German technical papers captured by the Allies in World War II.

Office of Technical Service, U.S. Department of Commerce, Washington 25, D.C.

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Handbook of Millwork Grades. This handbook gives standard, custom and premium grades which apply to exterior finish, miscellaneous exterior millwork, exterior and interior frames and jambs, interior finish, miscellaneous interior millwork, stairs and casework. It will guide the inspector in checking millwork for grades and qualities specified.

Woodwork Institute of California, 1833 Broadway, Fresno, California.

Use postpaid card. Circle No. 13

Electronic Computers For Shop Scheduling. This report describes investigations into the feasibility of applying electronic computer technology to shop scheduling, ways of applying it, and requirements in equipment and methods. Illustrative times and costs based on one plant studied are presented, and desirable computer characteristics are considered.

Order from Office of Technical Service, U. S. Department of Commerce, Washington 25, D. C.

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Packaging Booklet. Packed with up-to-the minute information to help manufacturers do a more economical and efficient job of packaging, this new booklet provides a convenient check list to determine the specifications for better corrugated boxes. Illustrations point up the factual copy which details how correct box design can effect substantial savings.

Write for "How to Specify Corrugated Boxes" from Hinde & Dauch, Sandusky, Ohio.

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List of Publications on the Growth, Structure, and Identification of Wood. Report 177 contains titles of more than 300 articles and publications on the structure and identification of wood, relation of wood structure to its properties and uses, relation of growth conditions to wood quality, tree secretions and exudates, and techniques used in the field.

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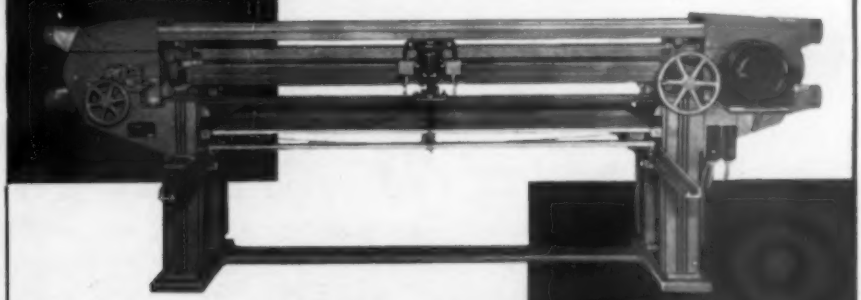

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Wood Favored For Cabinets...

Manufacturers Organize To Promote Products

By Fred F. Montiegel, Manager

National Institute of Wood Kitchen Cabinets

Presiding over the first full membership meeting of the National Institute of Wood Kitchen Cabinets are its president, Richard C. Chapman (right), Mutschler Brothers Company, Nappanee, Ind., and Institute manager Fred Montiegel. In front of the two men is an enlargement of the Institute emblem.

It has been apparent for a number of years to people in the home building industry that wood is the favored material for kitchen cabinets! But no one knew just how great the preponderance of wood really was.

A few indicators in the form of limited surveys have appeared in recent years. A midwest home building and design publication surveyed its readers over a 19-month period and found that 87% had installed wood cabinets. Another magazine, in conjunction with a firm of business analysts, surveyed 1200 home buyers and found that 91% favored wood kitchens.

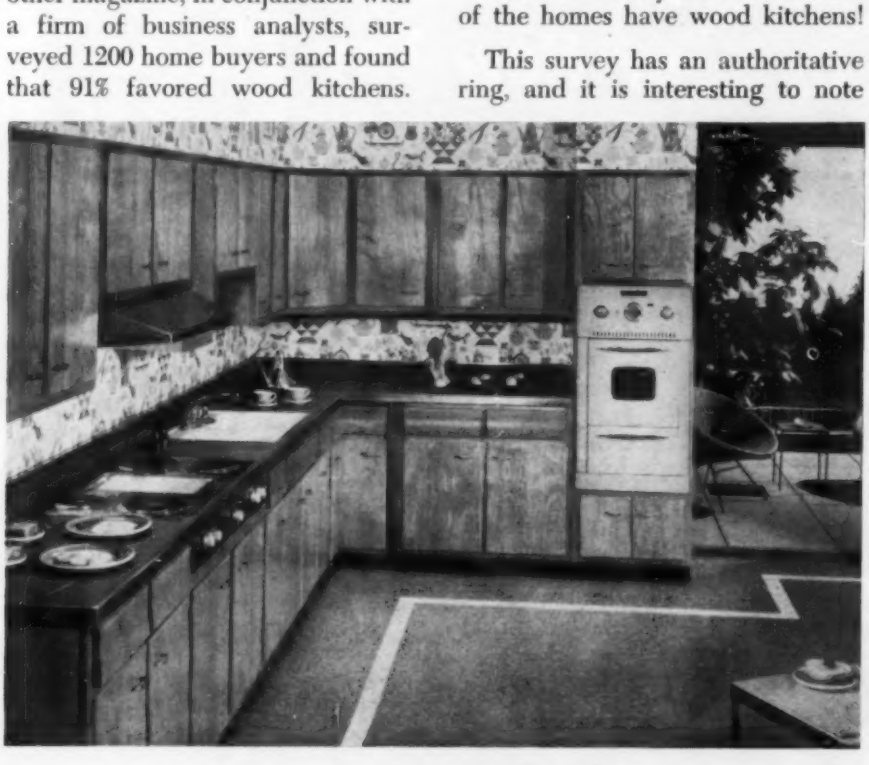
Eyebrows were raised at figures such as these, and skeptics were quick to point out that limited surveys could mean very little or they could mean a great deal.

Then, on November 23, 1956, a comprehensive survey was released by the Bureau of Labor Statistics of the U.S. Department of Labor. Covering the 218,600 new homes built during the first quarter of 1956, it is the first government survey to specify materials used for kitchen cabinets.

The BLS survey showed that 88% of the homes have wood kitchens!

This survey has an authoritative ring, and it is interesting to note how closely it corroborates the earlier surveys. Wood kitchen manufacturers, although pleased at the size of their margin, were not really surprised.

It was against this background of the dominance of wood in kitchen cabinets that leaders in the industry planned the development of a wood kitchen trade association. It is a credit to their foresight that success did not breed the complacent attitude that an association was unnecessary. Rather, it was their feeling that with success comes a large measure of responsibility to act through an industry association to keep quality standards high, to work out dimen-



Separation of the wall oven and counter-top range is both practical and useful and can be done easily with factory-made wood kitchen cabinets, as shown in the "L-shaped" kitchen. The natural beauty of the wood cabinets makes the kitchen a pleasant, cheerful place.

sional problems, to press for technical advances, and to set a worthwhile example for the many smaller new wood kitchen firms that are springing up.

In addition, the pioneers in the association felt that wood would not necessarily stay on top in the kitchen market through sheer momentum. It was necessary, the farsighted companies felt, to work together in a trade promotion program that would keep the advantages of wood kitchens constantly before the eyes of dealers, architects, builders and the general public. The ideal framework for such a program is an industry trade association.

It was in this spirit that the National Institute of Wood Kitchen Cabinets formally came into existence on September 29, 1955, in Chicago. Nineteen wood kitchen manufacturers were enrolled as charter active members. Later 19 supplier firms in the kitchen field were accepted as charter associate members.

The great bulk of the work done both in the formative period and in the first year of the Institute was carried on by its first board of directors. The members of this board were: Richard C. Chapman, president; Hugh Gregg, 1st vice president; Ivan Ramsey, 2nd vice president; E. H. Courtenay, treasurer; E. C. Hawkinson, secretary. Three staff men were appointed: Maurice E. Collins, executive secretary; Fred F. Montiegel, manager and John E. Harr, publicity director.

The first annual meeting of the Institute was held at Crawford Notch, N. H., on October 2, 3 and 4, 1956. At this meeting, progress during the first year was reviewed and plans laid for the current year. President Chapman was reelected, and two new board members were named: Henry Scheirich, president of the H. J. Scheirich Company, Louisville, and J. A. Stein, president of Whitehall Cabinets, Inc., Long Island, N. Y. They succeeded Mr. Gregg and Mr. Hawkinson.

Under the chairmanship of Mr. Hawkinson, the engineering committee surveyed the members of the institute early in 1956 on the subject of dimensions of built-in refrigerators. Results showed a strong leaning toward standardization, so a dimensions sub-committee was created to study the problem of dimensions of built-in ranges and ovens. The result was publication of recommendations for a modular system. The study was presented at the convention of the Institute of Appliance Manufacturers and provoked wide interest.

The NIWKC proposal is to cut down the bewildering range of sizes of the units produced by more than 50 appliance manufacturers by adherence to a reasonable modular system that will still allow for flexibility of design.

At the same time, the standards subcommittee was working in the field of VA and FHA requirements and carrying on field tests of certain requirements. This group is now developing a standard warranty form for the institute, surveying the industry on the subject of sizes and specifications, and initiating a study of the dimensions of range hoods and built-in refrigerators.

The engineering committee has met with the technical committee of the Steel Kitchen Cabinet Manufacturers Association for discussions of proposals for modular systems.

Chaired by Mr. Courtenay, the operations committee has undertaken the long-term task of establishing a system of confidential reports which will ultimately be of incomparable benefit to reporting companies. The following report forms have been established: Trend

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GOODSPEED, pioneer manufacturer of heavy duty **back knife lathes,** proudly announce the development of a completely new and thoroughly tested concept in back knife lathe design.

THESE LONG AWAITED FEATURES NOW A REALITY . . .

1. Completely automatic cycling relieves operator of all responsibility except loading center arms and receiving finished turning.
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ALL THIS AND MORE . . . has been achieved while still retaining the time tested and proven principle of the shear cut back knife at a **competitive price.** The inefficient feed screw and nut with High maintenance cost has been replaced by a pneumatically powered hydraulically controlled feed system—automatic centering and clamping of stock is achieved pneumatically. The Entire Machine is now powered by your plant airline (80-100 lbs.) or a 3 H.P. compressor can be supplied.

. . . **THE RESULTS:** A 50-75% production increase. Better turning. Fewer rejects. Greatly reduced operator fatigue.

20"-30"-40"—models are now available. May we send you sample turnings and production figures? A request on your letter head will insure your receiving the latest information on this **new** production lathe by return mail. Bulletin No. 112.

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of Business, breakdown of the Sales Dollar, Wage and Labor Information and Units Shipped by Type and Finish. Results are made known only to officials of reporting companies, who can then compare their own operations with the industry average.

George Mernick of Gregg & Son, Inc., Nashua, N.H., heads the Marketing committee which is undertaking the all-important task of surveying and analyzing existing market studies and research reports in an effort to develop and maintain better merchandising and distribution of wood kitchen cabinets.

The work of the newly-formed manufacturing committee, under the leadership of Mr. Scheirich, will be concerned with evaluating new and old materials, application and finishing techniques, and factory methods.

The promotion committee, chaired by C. R. Hunsicker of the Curtis Companies Incorporated, Clinton, Ia., has operated a comprehensive publicity program which began with the first day of the Institute. More than one million readers per day are exposed to wood kitchen stories in the nation's newspapers through the efforts of the publicity program. The committee also has launched a script service, with more than 400 radio and television stations using the scripts regularly on homemaker's programs.

The latest accomplishment of the promotion committee has been the publication of an illustrated 32-page booklet telling the complete story of wood kitchens in an institutional manner. The booklet is for use by the institute itself and by member companies. In the latter case, it can be imprinted with the individual company's name. The booklet covers the advantages of wood kitchens, how to shop for wood kitchens, tips on maintenance and installation, kitchen planning, the superior qualities of factory-made units and many other important subjects.

This kitchen has a character all its own, showing what the warmth and beauty of factory-made wood cabinets can do for both new and remodeled kitchens. Although it has modern built-in appliances, the kitchen has a period flavor, reminiscent of a European or Early American kitchen, achieved by the finish and the styling of the cabinets, the cafe curtains and the furniture.

Basically, the themes used by the promotion committee center around four major advantages of wood kitchens—beauty, durability, variety and flexibility—which have led to the overwhelming dominance of wood in the kitchen field.

The beauty and durability of wood cabinets are obvious advantages. Together, these advantages have spurred the swift postwar rise to dominance of wood kitchens, aided by the "open plan" in housing and greater emphasis on warmth and cheer in the kitchen. Sub-points are the wide range of finishes available and technical advances which have made wood cabinets more durable than ever before.

Variety is seen in the unlimited styling possibilities in wood kitchens and in the availability of stock units designed for every conceivable kind of storage and space need.

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The flexibility of wood cabinets is reflected in the fact that they can be adapted to any change in storage requirements, and that they are the best cabinets for accommodating the wide range of sizes of built-in appliances.

In addition to these themes, a very important one is stressing the advantages of factory-made wood kitchens, such as mass buying and storing of raw materials, production line economies, quality control procedures and the reputation of the manufacturer. It is the position of the institute that on-the-site carpenter-made cabinets cannot match these advantages in the aggregate, and that poor performance of on-the-job cabinets will reflect on the industry as a whole. Even a factory that employs only five or ten craftsmen has advantages over on-the-site construction in terms of proper tools and quality-control.

A special committee has been appointed to work out a plan for a 30-day training school for kitchen specialists. Distribution of wood kitchens is a broad operation which does not fall into a specific pattern. They are sold by lumber dealers, department stores, plumbers, contractors, mail order firms, appliance stores and kitchen specialty shops. The training school will be based on the idea that no matter through what channel the sale of wood kitchens occurs, individuals involved will benefit by comprehensive training in kitchen planning, merchandising and installation.

Promotion of the institute label has been another important activity during the early days of the NIWKC. Shaped in a free-form, and bearing one silhouette of a contemporary woman, the label reads: "Wood for Enduring Beauty—National Institute of Wood Kitchen Cabinets." The label is available for placement on cabinets produced by member firms only.

This has been the pattern of the first year of the new association—consolidating its original membership and launching work along a number of important fronts. With these activities well under way, the main effort of the institute during its second year will be to double its present active membership of 20 firms. Of the many hundreds of wood kitchen manufacturers, large and small, it is felt that at least another 20 companies will be farsighted enough to support the work begun so auspiciously.

As the membership of the NIWKC grows, and as the work of its committees bears fruit, we expect to have a fund of useful information for those interested in the production and distribution of wood kitchens.

Power Tools. New catalog of power tools for cutting, shaping, and drilling wood. Some of the power tools included in this catalog, with details, specifications and illustrations are: band saws, contour saws, band filers, cutters, shapers, drill presses, tool and knife grinders, jig saws, jointers, lathes, planers, belt and spindle sanders, saw jointers, shapers and spinning tools.

Boice-Crane Company, 931 W. Central Avenue, Toledo 6, Ohio.

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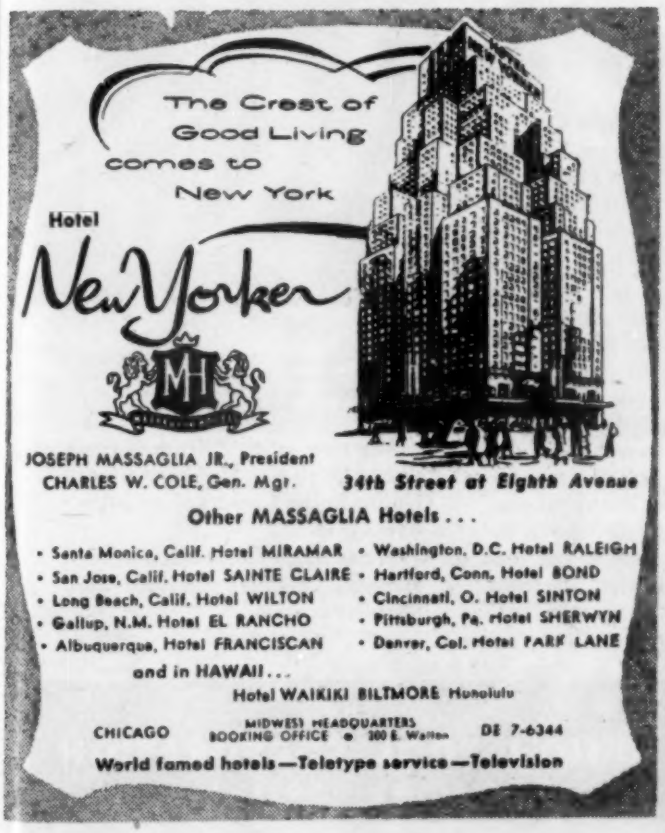
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SPREADING RESIN GLUES

By John Hyler

Double-roll glue spreaders, used for spreading resins, may be divided into two classifications, in reference to the position the two doctor rolls hold in relation to each other. In one type of glue spreader, doctor rolls are both on one side of the spreader rolls. Such a spreader must incorporate a pan-type reservoir, from which the lower spreader roll picks up adhesive.

The other style of spreader has its two doctor rolls on opposed sides of the glue-spreading rolls. This design allows both roll crotches to be used for holding adhesive. Some leading manufacturers of glue spreaders, as for instance Black Brothers Company, make power spreaders of both types. Generally, the design in which both roll crotches can be used as adhesive depositories is favored. There are some, however, who prefer having both doctor rolls on the same side of the spreading rolls, especially in cases where it is found desirable to impart a heavy spread of adhesive to rough stock.

On glue spreaders having doctor rolls on opposed sides of the spreading rolls, installation of a pan below is made only for the purpose of catching any possible drip or glue overflow that might occur. While spreaders having both doctor rolls on the same side of the spreader rolls have been built with two pans, mounted below the lower spreader rolls, the usual design on better machines calls for use of a single pan, in which both the gluing roll and doctor roll run.

Circulation in Pan

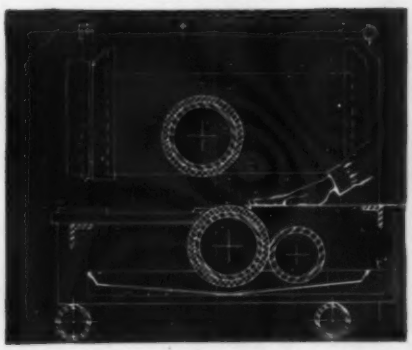
There is a certain amount of pumping action from the rolls, which keeps most of the adhesive in the pan in motion. Nevertheless, there may be stagnant places or areas in such pans, where resin will collect and not circulate. In any such case, non-circulating resin will obviously harden, and will thereafter be difficult to remove.

Methods of overcoming this trouble consist in using pans having rounded corners; employing shallower pans, or

Operation view of efficient Black resilient-roll glue spreader, operating in a plant of Curtis Company. Photograph courtesy Black Brothers Company, Inc., Mendota, Illinois.

End costly ACCIDENTS in roller coating operations!

OLD METHOD



NEW METHOD

Upper illustration shows obsolete roller coater and lower shows the Union method incorporating the Exclusive Union Safety Device . . . furnished at no additional cost.

At long last! Now you can have high production coating with *complete safety for your employees* . . . and end costly delays due to accidents.

The new Union Roller Coaters —for the first time in coating machine design—feature a safety device to protect your men from disabling accidents common to coating machine operations.

The new safety feature incorporates a release handle running the full width of the Roller Coater and located immediately in front of the operator. In the event of *any* emergency, the operator hits the release handle. Instantly, the lower roll assembly springs away from the upper one, preventing serious damage or injury to the operator or the machine. After actuation, the rolls can be reset within seconds.

The new safety feature is furnished on all standard heavy-duty Union Roller Coaters *at no additional cost.*

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providing enough slope to the pan bottom to assist good circulation of the adhesive. Trouble from this particular standpoint is more likely to occur in cases where resins of high-solids type are being used.

In any case where one has a spreader making use of a pan for a glue reservoir on high-solids resins, it will be well to stir the resin in the pan with a paddle from time to time, making sure no non-circulating areas are left standing. Cases have also been known where spreaders fitted with a glue-circulating pump handled high-solids resins much better after the glue-circulating system had been removed, and a gravity-feeding system was substituted.

Clogged Pipes Avoided

Where the glue-circulating system is removed, or where a spreader having no glue-circulating system is installed, the circulating pump and its drive, together with the pipe lines involved, are eliminated. This avoids clogging pipes, and thereby reduces maintenance cost. A saving in glue is also effected, because less glue must be discarded during clean-up period. Capacity of the glue-handling system is reduced, and the area of parts contacted by glue is also less.

Whenever a circulating system is removed from a spreader, an open holding tank or reservoir is positioned at a level above the upper spreading roll. From here, adhesive may be gravity-fed continuously, at a controlled rate, passing downward to the spreader roll crotches, and to the pan which services the lower roll, if any. Fast-opening valves can be used, by means of which the rate of glue fed to the machine is easily adjustable. The holding or supply tank may be refilled at suitable intervals through a line coming directly from the glue mixer.

Plywood Cold-Test Box

A cold-test box of plywood construction is being used with satisfactory results in testing the equipment of a 15-ton mobile refrigeration plant at the Corps of Engineers' Research and Development Laboratories, Fort Belvoir, Va.

Although the box was designed to go into a large test cell, where it would be protected from the weather, it is being used as a separate outside test unit. Only a coating of white paint and a canopy of canvas protect it from the elements. The interior of the box is unpainted. Engines up to 50 h.p., that will fit into the box, are being tested for starting and operation at low temperatures.

Plywood was used in constructing this cold-test box being used by the Army's Corps of Engineers' Research and Development Laboratories, Fort Belvoir, Va. Interior of the box is unpainted and only a coating of white paint and a canopy of canvas protects the exterior from the elements.

Three-ply ¼" plywood was used in construction of both the exterior and interior of the box, which is of knock-down construction and which is mounted on a 6" concrete slab. Sections of the box are 8½" thick, with the interior dimensions being 6' 4" deep, 7' 8½" wide, and 8' high. Aluminum foil sheets, .005" thick, are used for insulation with ¾" white pine separator strips used for spacing.

There is a full-opening door, equipped with hardware, and rubber strips are used for sealing. Cam-type clamps are used for pulling the sides of the box up tightly to make the seal.

Low temperature air is induced by a 2' square duct, located at the top of the box, and is exhausted through a duct of similar size located at the bottom corner. Temperatures can be varied from 100° plus, Fahrenheit, to minus 94° Fahrenheit. The box was built by students in the engineering department of the University of Kentucky, Louisville, Kentucky.

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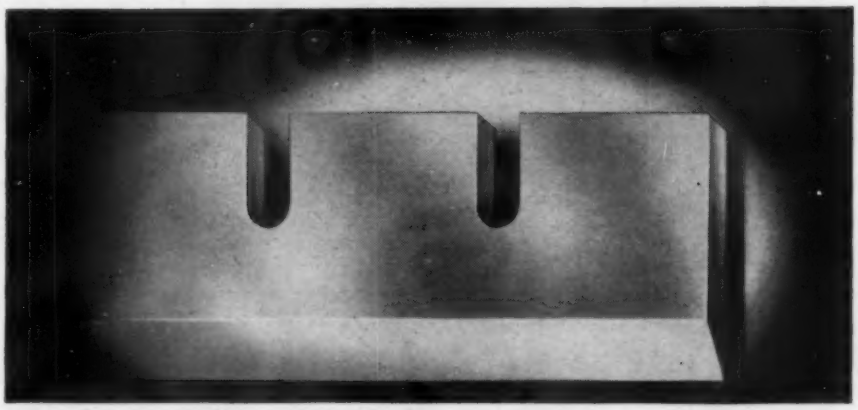

Woodworking equipment can be no better than its knives. That's why such great reliance has been placed on B & B Machine Knives for more than half a century—knives that can take greater speeds and faster feeds.

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Easy Ways to Expert Woodworking. The author, Robert Scharff, completely describes and fully illustrates the various uses and operational techniques of the DeWalt "Power Shop" multi-purpose woodworking machine. Well illustrated, with over 300 photographs and line drawings, a detailed index makes it a handy reference source for day-to-day questions on the use of the machines and general workshop problems.

Order from DeWalt, Inc., Lancaster, Pennsylvania.

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Carbide-Tipped Saw Blades. This colorful 8-page catalog gives detailed constructional information about these blades plus describing the different blades now being used in industry.

Forrest Manufacturing Company, Inc., P.O. Box 189, Rutherford, New Jersey.

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Flush Doors. This is a 4-page folder containing descriptions and illustrations about hollow and solid core flush doors for commercial and industrial use. A section devoted to specifications and species is also included.

Atlas Plywood Corporation, 1432 Statler Building, Boston 16, Mass.

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Multi-Rip Saw. This 8-page bulletin describes all of the features and advantages of the No. 909 multi-rip saw. It is designed for precision and high-speed gang ripping of stock as short as 5". Fifteen of the different features of this machine are given along with complete specifications for the machine.

G. M. Diehl Machine Works, Inc., Wabash, Indiana.

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Typical Lumber Designs. Nearly 300 designs of wood structures, ranging from basic types of trussed rafters and heavy wood roof trusses to highway structures. Quantity and material lists accompany each design. More than 200 designs are available.

Timber Engineering Company, 1319-18th Street, N.W., Washington 6, D.C., request booklet by name.

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Dryalator Bulletin. A new, 8-page bulletin on the Orr & Sembower Dryalator, a packaged device for automatically drying lumber, is now available. The Dryalator is designed for use by lumber and furniture manufacturers and for manufacturers of products which incorporate components made of wood.

The two-color bulletin, No. 1232, shows how the Dryalator brings high speed automation to wood and lumber drying. Illustration showing the equipment, with pneumatic recording controls, steam heating coils, and labor-time saving instrumentation are provided, as well as operating views of the kiln and Dryalator details. Schematic drawings of a typical Dryalator installation fully outline the way in which the Dryalator works. Color outlines of the various Dryalator components are provided.

Orr & Sembower Inc., Morgantown Road, Reading, Pa.

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A.W.P.A. Manual. Three new and fifteen revised standards for the American Wood-Preservers' Association manual of recommended practice recently have been issued. The manual is a technical handbook of value to preservative manufacturers, producers and users of treated wood, inspectors, chemists, etc. Of particular note is the issuance for the first time of a standard covering the pressure treatment of railroad car lumber.

This manual is available from American Wood-Preservers' Association, 839 Seventeenth Street, N.W., Washington 6, D. C.

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SELF-RELEASING
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Handbook of Furniture Facts. The new 1956-57 revised edition of the Seng Handbook, an authoritative encyclopedia of furniture facts, has been published and is now available. The 18th bi-annual edition of the handbook, which was first published in 1922, is a sales aid and reference source for men and women in all phases of furniture retailing, as well as architects, designers, decorators and home furnishings specialists. Attractively bound in a lacquered cover of rose beige and brown, with loose-leaf binding, the book's 188 pages describe and illustrate numerous facts about furniture styling and construction.

Order from The Seng Company, 1450 N. Dayton St., Chicago 22, Ill.

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Wood Particle Board Handbook. This publication discusses in detail the manufacturing methods and equipment used in the production of wood particle board. Other major aspects considered are the forms and types of raw materials used, the marketing of the board, and product properties. Also included is a bibliography of current literature on the subject. The 300-page book has been edited by Professor E. Sigurd Johnson.

Order from the Industrial Experimental Program, North Carolina State College, Raleigh, North Carolina.

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Lamin-Art Plastic Surfacing. A new folder in full color describes the new spectrum color line of Lamin-Art decorative laminated plastics, manufactured by Fabricon Products, a Division of the Eagle-Picher Co.

More than 34 different color reproductions of Lamin-Art patterns and colors appear. Other information includes application illustrations and ways to use Lamin-Art.

Copies available from: Fabricon Products, 6430 East Slauson Avenue, Los Angeles 22, California.

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Electrical Remote Positioning Controls. These controls are for push button and automatic operation. They feature a new shaft mounted control gearmotor for valves and variable speed drives to provide remote or automatic flow, speed, proportion and tension control.

The Jordan Co., Inc., 3235 West Hampton Avenue, Milwaukee 9, Wisconsin.

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Double Coated Tape. A new, illustrated brochure describes the advantages and shows uses of two double coated tapes. These are tapes which have adhesive on both sides. Quick and easy to apply, these tapes are used in place of tacks, clamps, glue or cements in many holding, splicing and bonding operations to cut costs, speed assembly and processing and increase output on the production line and throughout the plant.

The brochure, "Double-Coated Tapes," is published by the Dutch Brand Division of Johns-Manville. It is complete with in-use applications and illustrations and gives technical data, characteristics and performance specifications for both paper and cloth backed tapes.

Write to Johns-Manville Dutch Brand Division, 7800 South Woodlawn Avenue, Chicago 19, Illinois.

Use postpaid card. Circle No. 29

Timbond. A colorful four page brochure indicating the uses of Armour and Company's polyvinyl resin adhesives called Timbond has been prepared by the Adhesive Division. Timbond is the line of density keyed adhesives which are designed for gluing every commonly used species of wood ranging from the softest to the hardest.

The folder points out that Timbond has superior strength, fast setting, high freeze-thaw stability, is ready for instant use and can be applied by roller, glue gun or brush. A list of the woods and the recommended Timbond product is given in the folder along with information on Armour research and technical service.

Copies of the folder are available by writing to Armour and Company, Adhesives Division, 1355 W. 31st St., Chicago 9, Illinois.

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Strapping Machine. The F3 strapping machine fits into existing conveyor lines, and with push-button control, it moderately compresses, then tensions, seals and cuts one, two or three straps simultaneously. Typical applications as well as specifications of the pneumatically powered and electrically controlled machine are shown and described in this folder.

Acme Steel Company, 135th and Perry Avenue, Chicago 27, Illinois.

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Hand Hoist, Pul-Lift and Trolley Catalog. The booklet describes in detail Yale's line of lightweight, Load King hand hoists, built in capacities of ½ to 12 tons; Yale spur-geared hoists in their many varieties, available in a range of 500 pounds to 40 tons; Pul-Lift ratchet hoists and trolleys in capacities from ½ ton to 40 tons.

Yale & Towne Manufacturing Company, 11000 Roosevelt Blvd., Philadelphia 15, Pennsylvania.

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Make the Tough Jobs
Easy!
O. C. E.
ROUTER BITS
Full range of sizes with ¼" and ½" shanks. Multi-purpose bits of high-grade steel, carbide-tipped.
THE RIGHT TOOLS FOR YOUR JOB
P&R CO
PLANETOR
"Chip Flow"
COUNTER BORES
Employ the same cutting action that also makes Planetor "Chip Flow" machine bits outstanding. Stock sizes 1⅛" to 4½"; choice of mountings.
PLANETOR
"Chip Flow"
MACHINE BITS
Chip flow bits are unmatched for high-speed, accurate cutting. Designed for repeated sharpenings without changing form of bit. Stock sizes 1" to 4" by 16ths, 4" to 4½" by 8ths.
O. C. E. DOOR LIP
CUTTER SETS
Carbide-tipped—your answer to obtaining smooth finish on doors of masonite, plywood, abrasive materials. 2½" and 3¾" diameter sets.
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SEE YOUR JOBBER OR WRITE FOR LITERATURE TO:
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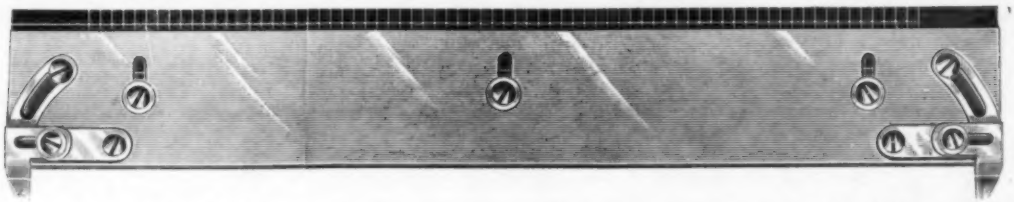
RELIABLE MOULDERS GAUGE



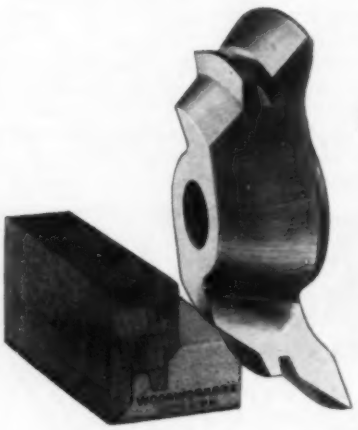
For quickly setting all moulding cutters; fits all four cylinders and all sizes of machines; adjustable for any surface knife projection and uneven wear of cylinder boxes. You do not need to buy a new gage every time you shift from one size machine to another. Complete instructions with each gage for making cutters. Hundreds of references.

For Safety Sake.

KNOUREK SCHMIDT COMBINATION COLLARS

Ball Bearing
&
Lock Edge

Eliminate friction caused by old style collars, prevent burning of patterns, insure absolute protection against knives flying out. Lock edge collars have screw adjustment enabling operator to set knives to thousandth part of inch.

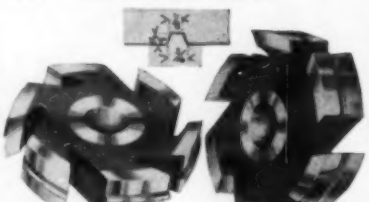


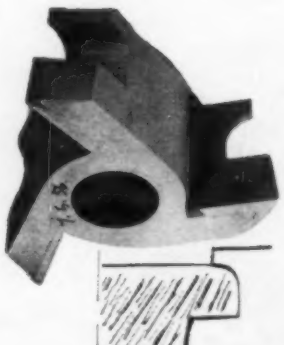
MITRE LOCK CUTTERS FOR SOLID LUMBER

Plywood and formica, Carbide tipped and High Speed Steel. Write for circulars.

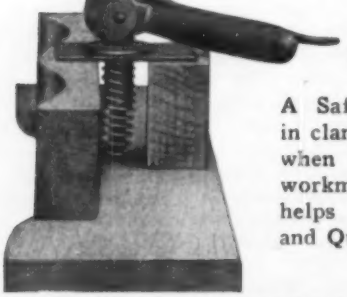
SOLID STEEL GLUE JOINT CUTTERS FOR AUTOMATIC GLUE JOINTERS

Tongue and groove cutters—standard cutters in stock are 5¼" dia., 2" thick, 6 teeth, 1¼ holes (can be bushed smaller).





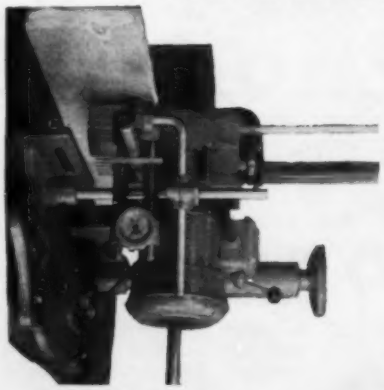
New Style Bull Nosed Carbide Tipped Cupboard Door Cutters for plywood. Hides the glue lines.



DETROIT SAFETY SHAPER FORM CLAMP

A Safety Shaper clamp used in clamping material to pattern when Shaping. Protect your workman with this clamp. It helps the morale of the men and Quality of Product.

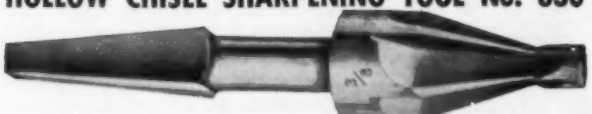
POWER FEED ATTACHMENT FOR RESAWING ON BAND SCROLL SAWS



Motor-driven, with ½-h.p. motor, 60-cycle, 3-phase, variable feed 10 to 90-feet per minute. Attachment fitted to your band saw will handle resawing of any stock which band saw itself will handle. By tilting table, bevel siding can be resawed.

Write for circulars today.

HOLLOW CHISEL SHARPENING TOOL No. 830



For use in hand brace, made of High Speed Steel. Chisel is placed in vise and a few revolutions of tool fastened in hand brace produces sharp cutting edge. Burr is then scraped or filed off and corners are finished by hand with small square file.

WOODWORKERS' TOOL WORKS

222 SOUTH JEFFERSON STREET
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A.S.M.E. MEET

Stresses Timber Construction And Prefabricated Houses

By Thomas D. Perry

The 37th annual session of the Wood Industries Division of the A. S. M. E. was held in New York City on Thursday, November 29th, 1956. The morning session emphasized several aspects of timber construction, while the luncheon and the afternoon session were given over to the problems of prefabricated houses. The various papers presented and the discussions can be outlined as follows.

Timber Roof Trusses

Mr. Byron M. Radcliffe, Director of Research, Place Enterprises, Inc., South Bend, Indiana, presented slides, charts and calculations for allowable loadings on such "A" trusses, when used under slightly sloping roofs, with various span dimensions. Each type of truss was reinforced at every intersection by plywood gussets, which were both nailed and glued to the timbers at the several joints. On questioning, the author stated that the nailing was used chiefly to develop gluing pressure, and that such nailing was not an important factor in carrying the superimposed loads.

Authorities are not in agreement on methods of calculating stresses in trusses, and many different designs have been found adequate. It was pointed out that roof trusses, up to about 24′ spans, are an important factor in prefabricated houses. Most prefabricators supply the set-up trusses as well as the plywood roof sheathing to cover them.

Engineered Timber Constructions

This subject was presented by Mr. J. C. VanDyke, Vice-President, Unit Structures, Inc., Peshtigo, Wisconsin. The author pointed out that the use of wood as a structural material had started when the human race was young, but that little thought or study had been directed toward improving its structural qualities by engineering methods, such as glued laminations, until about 50 years ago.

His paper described in detail the largest timber arch building in existence, the Jai Alai Sports Arena, West Palm Beach, Florida. This has a clear span of almost 250′, with a rise of 75′ and the arches are spaced 16′ apart. The length of the laminated arch members (around the curve) is approximately 300′, with a uniform width of 11″, and the depth varies from 46″ at the quarter point to 20″ at the crown. Two steel strap ends are bolted to the half arches at the crown, with a steel king pin to lock them together.

Each arch contains 17 thousand board feet of Southern pine lumber, weighing over 15 tons. A light crane of 10 ton capacity was sufficient to raise the half arches and was easily maneuvered to allow inserting the anchor pins at the buttress and the king pins at the crown. This was in marked contrast to the size of the crane that would have been required for metal trusses of such wide spans. These arches were made in four pieces (for transportation purposes), with deep "U" shaped channels, welded from structural steel, firmly bolted under the quarter point, so as to safely carry the maximum load at that critical spot. The roof boarding was 4″ x 5″, double tongued and grooved.

The author also described briefly "V" Gothic arches for churches, and cantilevered columns, with maximum depth at the knee. Another interesting use of laminates was for the construction of ribs and keels for naval mine sweepers, since wooden hulls cannot be detected by radar. A photo was shown of such a wooden vessel, 165′ long. Particular attention was called to the strength increments obtained by curving the laminated members during the gluing process. The discussion developed the prediction that straight laminated timbers, for local distribution, are foreseen as standard stock

Taken at Wood Industries luncheon. Left to right: William B. Wilkins, retiring chairman of executive committee; Chester L. Babcock, program chairman for 1957; T. D. Perry, first chairman of executive committee in 1920; Mr. Pollman, luncheon speaker; and "Pat" Patronsky, chairman Wood Industry Executive Committee for 1957.

items for lumber yards. Thus the need for providing the larger and larger timbers that future designers may require, can be met, even if the available trees are smaller and smaller.

Fire Safety of Engineered Timber Constructions

Mr. Frank J. Hanrahan, Executive Vice-President of the American Institute of Timber Construction, Washington, D. C., gave some dramatic demonstrations of the slow burning character of solid and laminated wooden timbers and columns. There were numerous instances where charred surfaces substantially slowed down the weakening of structures, providing greater safety to those trapped therein and to fire fighting crews. In some instances undetected fires in timber roofs had gone out of their own accord.

It was pointed out that many public campaigns opposing the use of wood structures were emotional in character and based more on ignorance than on knowledge of safety factors inherent in the slow burning qualities of wood. Another fact was noted; i.e., that casein glues, although not as moisture proof, are more penetrating than resorcinols, and often are preferable for untreated laminated timbers in semi-exposed locations. There was considerable discussion of fire retardent treatments of lumber, which can be done on the boards either before or after lamination.

Prefab Housing

The luncheon speaker, Mr. Richard B. Pollman, Chairman Prefabricated Home Manufacturers Institute Development Committee of Toledo, Ohio, had just come from a Chicago conference on the future of prefabrication.

The records indicate that of the 1,000,000 houses, more or less, completed annually during the last five years, the 1955 breakdown is substantially as follows:

ALL MASONRY STRUCTURES		
All precast block...	6%	
Brick faced precast blocks	10	16%
ALL WOOD OR WOOD FRAME STRUCTURES		
Brick or stone facing on wood frame...	26%	
Wood frame, conventional builders.	49	
Wood frame, prefabricated	9	84 100%

A different breakdown of 1955 building of homes, by locations revealed:—

Large metropolitan areas and suburbs	75%
Located in 6 major states	49
Located in 15 states	75
Located in the Los Angeles area	7
Located in the Long Island area	7

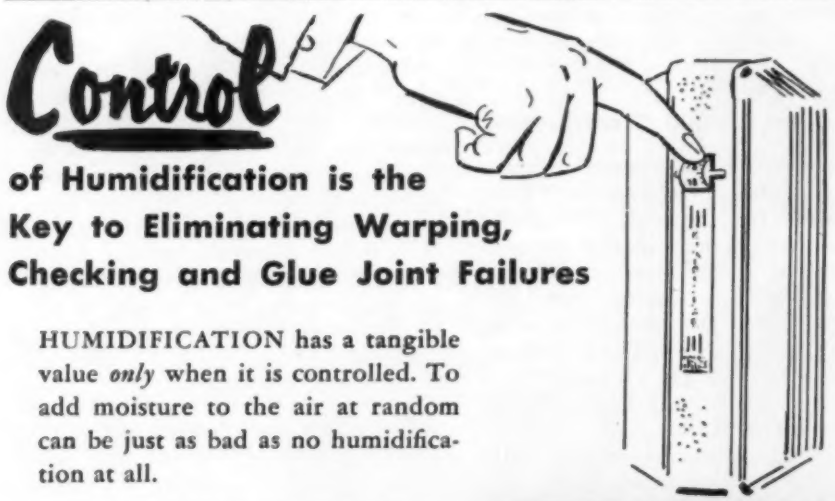
(These are percentages of one million and not cumulative.)

The definition of a prefabricated house, from CS-125-45, is as follows: "A prefabricated house is one having floors, walls, ceiling or roof, of sections or panels of varying sizes, which have been prefabricated prior to erection on the foundation. This is in contrast to the conventionally built home, which is constructed, piece by piece, on the site."

One of the essentials of the prefabrication of the future will be the complete standardization of all component parts from whatever source obtained. Such standardization will be mandatory, according to some modular design, to permit the integration of structural and non-structural units. Even the foundations must be standardized for any standard type of super structure. The non-structural parts include heating, cooling, hot water, plumbing, and electrical, not to mention integrated bathrooms and kitchen equipment. The present heedless and needless cutting of structural units and parts for such utilities, either before, during or after erection must be eliminated.

The speaker predicted that the future will see functional furniture and equipment, much of it built-in, and usually supplied with the prefabricated house units. This may have a substantial impact on the furniture industry, and the trend is already under way.

Wood has been the predominant material for prefabrication, probably because it is so readily available and so easy to use. Little intensive study has been given to the basic efficiency and economy of its use. Much more research



Control of Humidification is the Key to Eliminating Warping, Checking and Glue Joint Failures

HUMIDIFICATION has a tangible value *only* when it is controlled. To add moisture to the air at random can be just as bad as no humidification at all.

The prime purpose of humidification is to keep the relative humidity at a point where water neither enters nor leaves the wood. Allowing the humidity to rise to 60% at night and then letting it drop 20% or 30%, produces dimensional changes that are the cause of warping, checking and glue joint failures.

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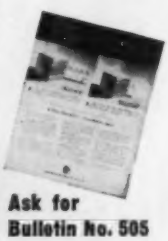

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is needed for either better adaptations of wood, or of some alternate material, or a combination of both.

It was the prediction of the speaker that sometime in the future prefabricated houses will be as standardized as automobiles, which have benefited much from exhaustive and effective research. The future purchaser of a "prefab" may have a choice between several makes and of different areas, but no more. Automobile manufacturing has gone through the cycles when the buyer could designate the type of bumper, lights, upholstery, seats, top, etc., resulting in a semi-custom made car, but that era is past. Prefabrication is now going through this process and is likely to reach the same ultimate solution in standardization as have automobiles, with no more than a few minor options.

Panel Discussions on Prefab Housing

After luncheon the afternoon was occupied by a symposium, with four speakers on different phases of the subject. Mr. Willard J. Worth, in charge of research at National Homes, Inc., Lafayette, Indiana, stressed that residential building is in a state of change that will eventually result in an organized industry with opportunities for technical progress. This will result in deviations from traditional methods and materials. Wood fiber boards and competitive materials will have unparalleled opportunities for new large volume markets. It was pointed out that fiber boards, usually a derivative of wood, have advantages in homogeneity, but are lacking in density to hold glue or nails. However they are unlimited in size, produce a minimum of waste, and are in low cost ranges.

Existing and traditional building codes, based on specific materials and sizes, using only nailing techniques, have impeded the progress of modern prefabrication. They are yielding reluctantly and grudgingly to modern performance standards, in which stressed skin constructions on light framework provide ample strength. However the struggle for up-to-date building codes has only started. Not only are there building code obstacles, but the FHA and VA impose restrictions, which in general, are more tolerant than the obsolete codes, but still serve to retard scientific progress in building.

Mr. John K. White, in charge of new developments for American Homes, Inc., Allentown, Pennsylvania, discussed the economics of wood construction, divided into two main headings, design considerations and erection methods. Under design considerations he pointed out that higher grades of lumber are only essential where strength is needed, and that where stiffness is a requirement, there may be a choice between species. The required dimensions of prefabricated parts must be within normal standard cuttings of lumber that are readily available; *i.e.,* lengths of 8′-3″ can only be obtained from 10′-0″ pieces, a waste of some 20% in material cost, incoming freight charges, extra handling and inevitable waste disposal.

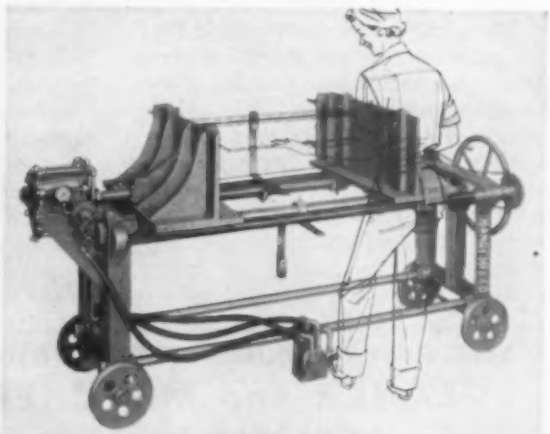
Erection methods involve the problems of the size and weight of prefabricated units. Some authorities advocate as large units as can be handled by a small erection crew, while others favor the use of a hoist or small crane. The cost of transportation to a site may run as high as $400. This, together with the savings resulting from erecting large units, rather than assembling buildings piece by piece, must be more than offset by economies in the factory, if prefabrication is to fulfill its mission.

Another problem in prefabrication is to anticipate the locations of mechanical equipment and to do all preparatory cutting on machines, rather than leave such tasks for laborious manual work on the site. Ultimate economy will result only from examining every step and determining the proper time and the best way to do it.

Mr. C. S. Van Aucken, Manager Sales Engineering & Prefabrication Department, Weyerhaeuser Sales Company, Newark, New Jersey, spoke on wood utilization and stressed the fact that while most prefabricated houses are one story, there is still too great a diversity in basic designs. In order to be successful prefabrication must show a minimum of 10% savings under the costs of conventional building. Prefabrication must assemble as large units as it is practical to convey to the site and to erect with a minimum crew.

Do you make every drawer 3 times?

Do you bench pre-assemble, then squeeze in a clamp, then do a lot of costly drawer fitting? Now, the *No. 43A Handy Air-powered Drawer Clamp* makes it easy and fast to turn out accurate, square drawers without pre-assembly, and fitting is reduced to a minimum. After quick set-up, the operator simply places the drawer parts in the Clamp, and, in a single or dual operation, makes you better drawers. Down go costs on any quantity.



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In your new car power-aids are pure pleasure; in cabinet and case assembly this engineered power yields dollar profits. Power revolving, power clamping go to work for you with the new *No. 410 Series Handy Case Clamps.* Optional power top-pressure, too, with exclusive Handy Hollow-bore cylinders doing the work fast and true. Your cabinet makers always have full control of clamping speed and pressure and revolving. To men responsible for production and lower, competitive costs, Handy Full-powered Case Clamps are today's buy that pays.

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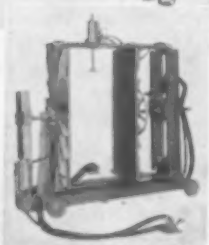

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The final speaker was Mr. James T. Lendrum, Director of Small Homes Council, University of Illinois, Urbana, Illinois. His slides traced the progress of prefabrication from the log hut, partly prefabricated by notching and cutting to lengths in the woods before dragging to the site, to the ultra modern type of elaborate prefabricated home of today. It was interesting to note that the differences between the log cabin and the modern prefab, were as marked as the changes from the design of the horseless carriage of 1900 to the automobile of today. No one believes that the designs of the modern prefab or of today's automobile are static. The prefabricators with some 20 years of actual experience stand about where the automobile did in the 1920's. What will be the approved design of the prefab some 30 years hence, if it follows the time table of the automobile industry?

surfaces are not favored, because of

The question and answer period kept the panel on their toes. Several answers were quite revealing. Exterior wood paint maintenance problems. Many owners face their homes with brick or stone up to the eaves. Some prefabricators use plastic faced plywood for gable ends to secure better paint retention. Moisture condensation in enclosed spaces remains a perplexing problem, which is also true of conventionally built houses, and adequate ventilation for all enclosures is practically mandatory. Some prefabricators use treated lumber for sill plates on the foundation, and termite guards are required by government insured loan authorities. There is a distinct trend toward using hardboard for flat painted interior areas, an example being flush doors on semi-hollow cores. Gluing pressure on unit frames is usually developed by a regulated automatic nailing. Placing units in hot presses to cure the adhesive has proved to be uneconomic. Roof trusses are usually factory assembled and delivered to the site with sheathing grade plywood, in packages, for roof boarding. Erection crews are often supplied by the prefabricator. Prefabricated houses without cellars are usually erected on concrete slabs; with cellars, joists and plywood sub flooring are supplied.

At this meeting it was announced that the next meeting of the Wood Industries Division would be held at Winston-Salem, North Carolina, on May 16-17th, 1957. The program will emphasize automation in furniture manufacturing and there will be a symposium of core materials for plywood, with speakers representing lumber cores, chipboard cores, paper honeycomb cores and hollow cores. It promises to be a worth while meeting, presenting constructive ideas in the manufacture of furniture.

Roller Bearing Setworks. Bulletin SW-2 describes Whelands No. 7-E roller bearing setworks. An improved version of the No. 7-D setworks, the No. 7-E retains all the best features of the older model. The new ratchet selector is one of the improvements and permits a faster selection and wider range of thicknesses than is possible with stop pins.

The Wheland Company, Signal Mountain Road, Chattanooga, Tennessee.

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Electric Log Stacker. A colorful 6-page folder giving complete information about safety features, powered tusks, automatic kicker, big capacity fork, live boom, infinite power selection and many other features. Illustrations depict use of this equipment "from truck to mill."

R. G. LeTourneau, Inc., 2399 South MacArthur, Longview, Texas.

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"She had a figure like a stick until the boss put her on the shaper."

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PLANER and MATCHER
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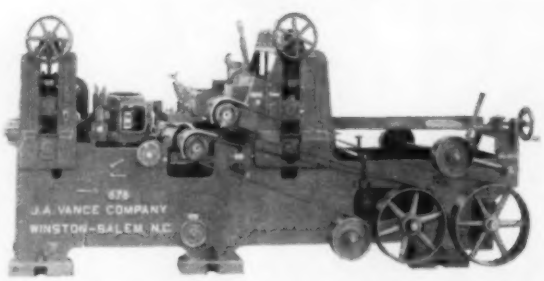

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Close-up view of mid-section showing lower cylinder extended

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• OVERSIZE trunnion • Guaranteed precision at the cut • 10" blade cuts 3¼" hardwood like butter—as slick as a costly 5 H.P. 12" saw • SINGLE blade positioning control on the front • Saves time • Prevents accidents • Up to 44% more ripping capacity with standard equipment • 5% to 29% faster blade speed • Blade tilts left—safer for right-handed operators • Steel, all-purpose insert serves saw blades and dado heads, without interchange • Ground cast-iron fence.

Write for free catalog and prices.

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A roundup of day to day in-plant problems and how they were handled by management men. Each incident is taken from a true-life grievance which went to arbitration. Names of some principals involved have been changed for obvious reasons. Readers who want the source of any of these cases may write to WOOD WORKING DIGEST.

Must you pay a helper a higher rate for any skilled work he does?

WHAT HAPPENED

Maintenance helper Merwin Rush was assigned to help Don Rahorn, a journeyman. Most of Merwin's work was preparation and cleanup. When he relaxed between these chores, Rahorn handed him some tools, saying, "You're not going to sit around doing nothing. Make yourself useful."

Under Rahorn's direction, Merwin worked at some of the journeyman's simpler chores. After a few months of this, Merwin asked to be paid the journeyman's rate for the work he'd done. The company said "No." Merwin appealed, and the case came to arbitration. Merwin argued:

- It said in the contract that a worker temporarily assigned to another classification would be paid the rate for that classification.
- He actually did some of the journeyman's chores.
- As long as he did journeyman's work, he temporarily was in the journeyman's classification and should be paid for it.

The company countered:

- The maintenance helper classification was set up as a training ground for promotion.

ANY WOOD SHAPING JOB . . . *handled with ease*

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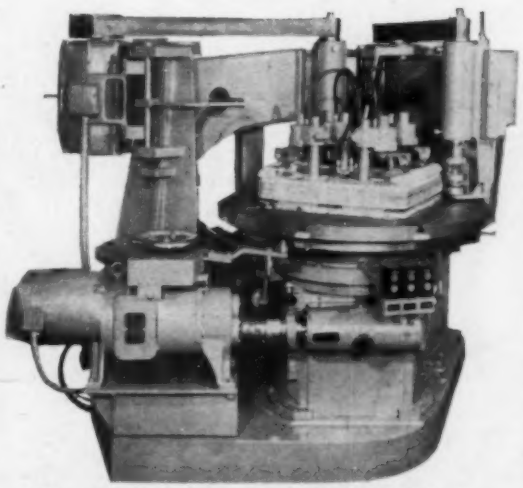

The AS-40 and AS-72 AUTOMATIC SHAPER are both constructed for the greatest strength and rigidity.

RICHARDSON'S ROTARY TABLE TYPE AUTOMATIC SHAPERS are designed for practically any wood shaping job — from cutlery handles to table tops.

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- The only way a helper could fit himself for promotion was by doing some of the chores of a higher job.
- The description of the helper's job said in black and white—"Under close direction may perform assigned tasks."

Was the company: Right ☐ Wrong ☐

What Arbitrator Maurice Merrill Ruled

"The work was relatively simple and did not call for exercise of the higher skill of journeyman. Merwin Rush is not a journeyman and needed more experience if he was to gain proficiency. There is no showing that, over a substantial period of time, the helper was used with regularity in skilled work or that a significant proportion of the total skilled work was done by a helper.

"The company has a policy of promoting employees to higher ranks and encouraging them to qualify for promotion by acquiring skill in the line of succession. The work in which Merwin Rush was engaged would increase his skill in such lines. I come to the conclusion that the grievance must be denied."

Can you fire a competent worker because she cannot get along with the other girls?

What Happened

Alice Hardy was tops as a worker. But she couldn't get along with the others. She was eccentric and snooty. The other girls were hostile. She made no effort to win their friendship or conform in any way to the rest of the group. After a while there were so many snide cracks flying back and forth, and so much conniving and bickering, that the previously pleasant work group turned into an armed camp. Talks all around by the foreman did no good. So he fired Alice as "unsatisfactory" because she had damaged the morale of the group. The foreman claimed:

- Everything had been fine in that group before Alice started to work there.
- Teamwork and group effort were essential in that section, and Alice had been a disturbing and disruptive influence.

Alice retorted:

- She did a good job. There were records to prove it.
- If the other girls didn't like her, that was their lookout, not hers.
- Since she wasn't employed as a social director, she didn't see what getting along with the other girls had to do with her employment.

Was the employee: Right ☐ Wrong ☐

What Arbitrator Paul Prasow Ruled

"The burden of compatibility would seem to fall more heavily on Alice than on the others. In the work situation, perhaps more than in outside relationships, the individual must adjust relatively well to the group or tensions will be created that interfere with efficiency and productivity.

"The ability to get along with other people is an even more important requisite here than in most other jobs because of the teamwork demanded. Alice's personal drives interfere with her satisfactory adjustment both to the group with whom she worked and to the work requirements itself. In both these areas, Alice's lack of adjustment caused her to be 'unsatisfactory.' The foreman appears to be within his rights in removing her."

Can you make a worker retire at 65 when the contract says nothing about retirement?

What Happened

The company removed John Marnik from the payroll because he had reached the compulsory retirement age of 65. This had long been the company's policy, though there was nothing in the contract about retirement. Marnik objected, and this became the first formal grievance on the subject. It went to arbitration. Said Marnik:

- The contract said nothing about retirement, so the company

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couldn't take him off the payroll except for layoff or for cause.

- Some workers had been kept on after they got to 65.
- The company didn't have the right to set a compulsory retirement age of its own.

The company argued:

- It had long had a regular policy, known to everybody, of retiring workers at 65.
- What exceptions it made were due to the labor shortage during World War II and the Korean War.
- Since the contract didn't say anything about retirement, it had the right to set a compulsory retirement age.

Was the company: Right ☐ Wrong ☐

What Arbitrator Joseph Shister Ruled

"Where the contract is silent, the issue must be resolved by an appeal of that logic and equity which takes full account of the interests of both parties.

Such an appeal leads to this response: the company does have the right to establish a compulsory retirement age for its employees provided that it can demonstrate that such a policy is not unreasonable.

"In the absence of a standardized compulsory retirement age, the company would have to judge each case separately. Not only would that impose an undue administrative burden on the company, but it would inject considerable subjectivity into the problem with the result that grievances, arbitration and conflict would be encouraged. The logic behind the company policy is reinforced by well-established precedent.

"Ever since the union obtained bargaining rights, and long before that as well, the company has pursued a policy of compulsory retirement at age 65. True, 10 workers were employed by the company beyond the age of 65. But all of these cases involved special circumstances which warranted the company action, and in no way contradicted the general policy of compulsory retirement at 65. Is 65 a reasonable age for retirement? Whatever the psychological, economic or sociological shortcomings of this figure, the irrefutable fact is that it is in widespread, almost universal use as a benchmark for retirement in America. The grievance is denied."

"I just hired a real find—an employee who doesn't drink coffee!"

Recommendations for Preservation of Wood in Building Construction. These recommendations are detailed specifications covering the type of preservatives, methods of treatment, and degree of treatment required for the various items of lumber, millwork, etc., commonly used in residential construction. These specifications provide a simplified guide to the proper preservation of the many wood parts of a building under varying conditions of exposure.

Protection Products Manufacturing Company, Box 747, Kalamazoo, Michigan.

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Durability of Water-Resistant Woodworking Glues. Report No. 1530 details the results of Laboratory tests on the durability of several glues under various conditions of temperature and relative humidity.

U. S. Forest Products Laboratory, Madison 5, Wisconsin.

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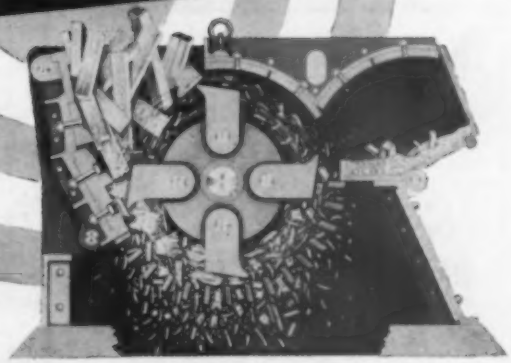
WILLIAMS "No-Nife" HOGS



Cross section of "No-Nife" Hog showing how fast-revolving chisel-edge hammers reduce wood by impact until properly sized to pass through grate at bottom of machine.

1 Waste wood, automatically conveyed and hogged on Williams equipment, reduces disposal costs up to 75%! One man can handle as much tonnage in chips as three men can handle in awkward pieces and lengths.

2 **If used for fuel,** scrap wood hogged on a Williams is completely combustible, yields maximum BTU's, gives 100% heating value. Unhogged scrap restricts air flow, burns unevenly, smothers the fire, causes excessive smoke.

If sold in chip form to chip board manufacturers, wood refuse processed in a "No-Nife" Hog becomes a top quality product, uniformly ground and sized, and commanding highest prices.

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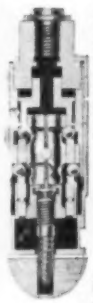

This tool is used by a majority of plants where hanger bolt driving is done on a high production basis. Can be operated at any speed which is safe for driving the hanger bolt. It is not necessary to stop rotation at any time.

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TOP WINNERS TO BE FEATURED IN MUSEUM OF SCIENCE AND INDUSTRY

Hardwood products ranging from fine furniture and complete, pre-fabbed rooms to cigarette lighters and molded modern church pews were honored with 1956 "Design in Hardwoods" awards at the annual banquet of the Fine Hardwoods Association held late in November at the Furniture Club of America, American Furniture Mart, Chicago. Thirty-six awards in all were presented in the four major design classifications of architecture, production furniture, custom furniture, and general products including sculpture.

The annual "Design in Hardwoods" awards are given by the Fine Hardwoods Association on behalf of the hardwoods industry in conjunction with the $400,000 Hardwoods Exhibit at Chicago's world-famous Museum of Science and Industry. The six designs, and their designers, receiving awards "for highest honors" will be featured in the Hardwoods Exhibit throughout the coming year. All award winners will be displayed at the January 1957 furniture market in Chicago.

Over 600 entries from architects, designers and manufacturers were submitted in this, the third annual "Design in Hardwoods" awards selection. Most of the winning entries were contemporary designs, illustrating how wood, the oldest material of all, lends itself so naturally to modern design and technology.

Much design emphasis on the individuality of the various hardwoods and wood figure types and many "custom" wood effects offered at popular mass-produced prices, were the outstanding trends noted in the design entries.

Round dining table—walnut plywood top. Solid walnut legs, laminated maple stretchers. Note new lower working height.

Entries showed that with today's swing from stark functionalism towards an emphasis on elegance, warmth and a natural richness inherent in materials, fine hardwoods are being used in many new ways and are recapturing former markets temporarily invaded by imitation woods and other materials, e.g. several new all wood TV designs.

"Designs submitted represented a greater variety of product types and architectural uses than ever before," commented Burdett Green, executive vice president of the Fine Hardwoods Association. "In some cases, these designs represented a return to wood. In other instances, hardwoods invaded new markets."

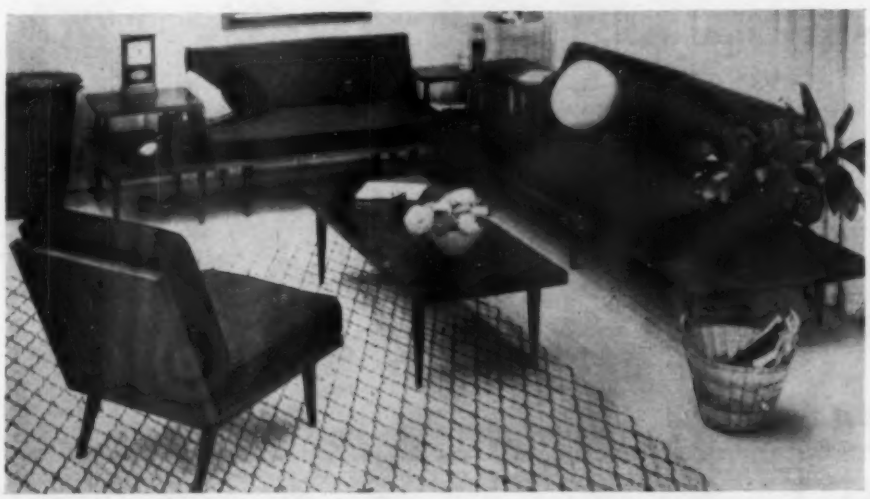
Award Winners

Awards for highest honors in production furniture were presented to Edward J. Wormley for a five-sided walnut dining or game table designed for Dunbar Furniture Corp. of Indiana, Berne, Ind., and to Isamu Noguchi and Lewis Butler for a walnut dining or conference table they jointly designed for Knoll Associates, Inc., New York City.

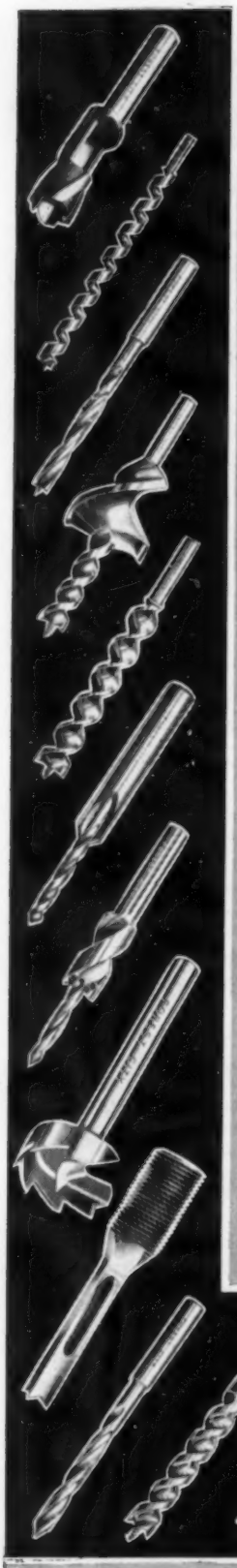
Top honors in custom furniture design were awarded to Samson Berman Associates of Flushing, L.I., New York, for cherry and walnut furniture designed to coordinate with mahogany and Korina paneling and built-ins in the remodeled Berman home.

Highest honors in the architectural design category were shared by architect Marshall W. Perrow of Tacoma, Wash. for a unique curved Philippine hardwood and birch wall created for a local restaurant interior, and by Chicago architect Bertrand Goldberg for a residence featuring hollow-core Honduras mahogany plywood exterior walls and matching plywood interior paneling and built-ins. Goldberg was also awarded an architectural honorable mention for his prototypes of prefabbed room units that employ airplane-type, stressed-skin hardwood plywood interior and exterior construction over an all-wood frame. These room units, complete with built-in furniture, can be assembled in many combinations for "custom" homes in many fine hardwoods.

A one-piece oak plywood church pew body, molded to fit body contours, won first place award in the general products category for designers B. W. Henrikson and A. C. Hoven of American Seating Co., Grand Rapids, Mich. Other winning products in this category were a solid walnut Ronson cigarette lighter, a deluxe Fred McCarthy hardwood sports boat, do-it-yourself furniture designs by Bill Baker, a Motorola walnut TV-hi-fi set, and a carving of Moses by Chicago sculptor Egon Weiner.



Living room suite. Hollow core plywood in walnut and cherry, natural finish. Backs and seats are of plywood.



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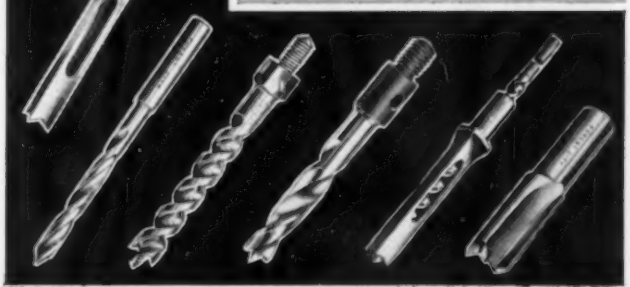

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Dining-living room with African mahogany & Korina paneling. Cherry table and chairs, walnut inlays. Contains "floating" TV set on structural poles. The furniture has been designed to coordinate with hardwood paneling and built-ins.

Cherry plywood and solid desk or dresser. Pewterized copper hardware is used. Matching chair is in cherry.

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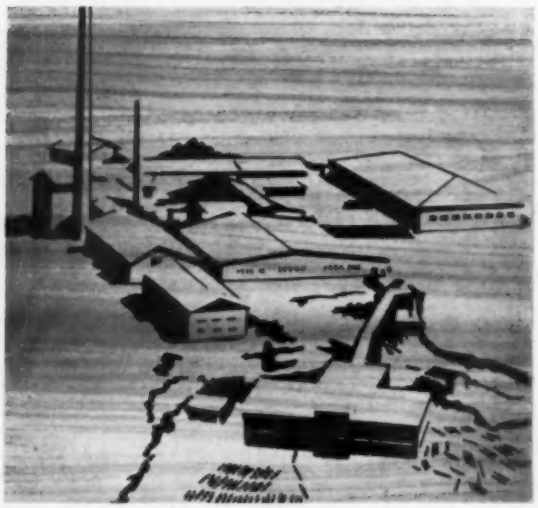

men in the industry

Ashby Re-elected Head of Hardwoods Association

William F. Ashby, partner of the Ashby Veneer & Lumber Company, Jackson, Tennessee, was re-elected president of the Fine Hardwoods Association at the 24th annual meeting held in Chicago this winter.

Other new officers elected for the coming year are George F. Wilhelm, vice-president of the R. S. Bacon Veneer Company, Chicago, who was elected vice-president, and Bice A. Roth, vice-president, Amos-Thompson Corp., Edinburg, Indiana, who was elected treasurer. Burdett Green was re-elected executive vice-president of the association.

During the annual meeting, the new industry-wide office modernization program was outlined by R. D. Behm of the Hardwood Plywood Institute. The project report met with enthusiastic approval and will be supported by the association in the spring.

A report on hardwood imports was presented by Charles E. Close of the Hardwood Plywood Institute. The Fine Hardwoods Association has restated its firm stand against the uncontrolled flood of imports of plywood, veneers and other hardwood products coming into the country at present.

The association is coordinating its efforts with several other branches of the hardwood industry similarly hurt by these imports from countries that produce these hardwood products under eleven cents per hour wages and other sub-standard working conditions.

Store Fixture Future Good

Purchases of store, bank and office fixtures have exceeded $200,000,000 annually in this country since World War II and are continually increasing, according to the directors of the National Association of Store Fixture Manufacturers, who met at the Shamrock Hotel in Houston, Dec. 6-7, 1956.

"It's a sure success!" is what W. S. Wyckoff of Stroudsburg, Pa., exposition chairman (left), is saying about the coming exposition. Listening to him are, left to right: Robert L. Strauss, NASFM executive secretary of Chicago; Richard F. Kaufman of Muskegon, Mich., president of the association; and W. F. Aschinger, Jr., of Columbus, Ohio, publicity chairman.

They agreed that a large share of this demand has been caused by the replacement by business organizations of older and less efficient and less attractive fixtures with new and modern equipment designed to attract customers and stimulate the sale of merchandise. This replacement market and the production of fixtures for newly constructed stores, offices and banks, including retail establishments in outlying shopping centers, assure the fixture manufacturing industry a healthy future, the NASFM directors agreed.

The store fixture industry is of such economic importance to so many suppliers that the NASFM is sponsoring the first trade exposition ever held for them. It will be presented March 21-22, 1957, at the Conrad Hilton Hotel in Chicago in conjunction with the second annual convention of the association.

N. J. Chapter Formed Architectural Woodwork Institute

Recently, a formal organizational meeting was held of the New Jersey Chapter of the Architectural Woodwork Institute, initiating its formation. This is the first organization of its kind in New Jersey, and its membership is composed of firms, throughout the state, who manufacture special architectural and institutional type millwork.

The officers elected are Joseph Lenkowsky, Baldwin Lumber-Junction Milling, Inc., president; John Mielach, John Mielach Millwork Company, secretary-treasurer; and Richard Doyle, Center Lumber Company, publicity director.

Basically, this New Jersey Chapter is an outgrowth of the national "Architectural Woodwork Institute" of Chicago, Illinois. The national group is also a relatively new organization, which was formed for the purpose of an industry-wide effort to restore wood and wood products to their rightful place in today's architecture. This is being accomplished mainly by furnishing technical and informational data to the Architects, of a nature that has never been furnished before this date, by a continuing series of brochures containing specific details and information which help the Architects design architectural woodwork more effectively and economically.

On the state level, the chapter will strive to work more closely with the architect and general contractor and to resolve many of the long standing questions of the industry. The chapter will also work to encourage the use of wood, and to advise of the basic superior qualities of wood in institutional construction.

Glue Course

The annual five-and-one-half-day short course in wood gluing will be offered by the State University College of Forestry at Syracuse University on Jan. 28-Feb. 2, 1957.

The course, which will be given under the supervision of Prof. Alfred H. Bishop of the Department of Forest Utilization, will consist of practical laboratory work, discussions and technical lectures in understandable terms for management and production personnel of all levels. No previous technical training is required.

Instruction will be given in the structure and properties of wood, veneer drying, staining and decay of wood, veneer and plywood, selection and machining of wood, selection of wood adhesives and their characteristics, principles of gluing, hot and cold pressing techniques, radio frequency heating, testing glue-bond strength and quality control in gluing, with considerable emphasis on gluing defects and their causes.

Registrations and requests for additional information should be addressed to: "Wood Gluing Short Course," Department of Forest Utilization, State University College of Forestry at Syracuse University, Syracuse 10, N.Y.

North American Plywood Expands to New and Larger Offices

Because of heavily increased sales, North American Plywood Corporation announces the opening of new, larger offices at 120 East 56th Street, New York 22, N.Y. In line with the office expansion, North American Plywood Corporation introduces a new oriental blonde plywood under the trade name mahara, and also an oriental oak, a teak, a cherry, and a nutara.

These new introductions are proving welcome additions to North American Plywood Corporation's regular lines of interior, exterior, and marine plywoods.

Truax Retires

Dr. T. R. Truax has retired as chief of the division of timber processing at the U. S. Forest Products Laboratory. Dr. Truax has acquired a reputation for his broad grasp of research within his own division and also of the whole forest products field and the major objectives of the forest service. He is the author of many publications on gluing.

Nationally Truax has served as chairman of many technical committees created to set standards, specifications, and methods for testing wood-preserving and fire-retarding treatments and glues and gluing techniques. He is now a member of the Wood Technology Committee of the United Nations Food and Agriculture Organization.

Succeeding Dr. Truax as chief of the division of timber processing is Dr. Herbert O. Fleischer. Since 1944, Fleischer has been in charge of the laboratory's veneer and plywood research. Under his direction, veneer-cutting controls and devices have been developed that are widely used by industry.

In his new post, Fleischer will be in charge of the laboratory's extensive research in glues, laminating processes, veneer and plywood, paints and wood finishing, fireproofing chemicals and treatments, and composite products.

Evans Buys Haskelite

Evans Products Company of Plymouth, Michigan, and its subsidiary have entered into agreements for the acquisition by its wholly owned subsidiary of substantially all of the assets of Haskelite Manufacturing Corporation. The purchase of such Haskelite assets has been approved by the board of directors of Evans Products Company, its subsidiary and Haskelite.

The agreement is subject to the approval of Haskelite stockholders. Haskelite and its subsidiaries manufacture doors, door units, and laminated wood products which include Plymetl and Ornalite. In 1955 Haskelite introduced a new line of products known as Hasko-Struct, utilizing plastics, chemicals and raw materials for the manufacture of laminated panels for household refrigerators and freezers, freight cars and trailers, interior panels and curtain wall insulation used in building construction.

Haskelite operates a plant at Grand Rapids, Michigan, and three subsidiaries —Meyercord Compound Lumber Company, Marquette Veneer Company and Gillett Log Company, operating in Mobile, Alabama; Marquette, Michigan, and Sault Ste. Marie, Canada respectively. Evans Products Company is a major producer in the northwest of fir plywood, lumber, battery separators, hardboard and other products in five plants located in the northwest.

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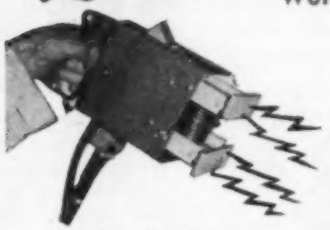

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Preliminary Plans for F.P.R.S. National Meeting

Preliminary plans for the 11th annual national meeting of the Forest Products Research Society, to be held at Buffalo, N.Y. June 24-28, 1957, have been announced by general meeting chairman C. R. Lockard.

It will be the first F.P.R.S. national meeting to be held in the East since Convention Hall in Philadelphia served as the site of the fifth annual national meeting in 1951. All technical sessions and the FPRS Suppliers Table Top Exhibits and Show will be held at the Hotel Statler, well known for its facilities as a convention center.

Conference to Merchandise Wood Office Furniture

The second "modern merchandising" dealer conference, sponsored by the Wood Office Furniture Institute, brought more than 150 office furniture dealers from Detroit, Pittsburgh and communities throughout Ohio to Cleveland recently. The group visited the expansive display rooms of the Ohio Desk Co. and the Wagner-Henzy-Fisher Co., each of which received a WOFI "certificate of merit" for "and outstanding example of modern merchandising." Discussions centered around new display and store modernization techniques, use of W.O.F.I.'s new sales tools, and development of office design services. New WOFI programs are aimed at accelerating the present trend towards "good business living" in modern offices.

WOFI plans to hold its next "modern merchandising" dealer conference in February, at Nashville, Tenn.

New Offices for Wilco

New enlarged facilities at Memphis Municipal Airport have been occupied by Wilco Machine Works, Inc., formerly at 1301 N. Hollywood St. New mailing address is P.O. Box 3722. The manufacturing and rebuilding shop remains at the Hollywood address.

"Additional personnel required to service our territory dictated the need for more space for executive, engineering and sales offices," Richard O. Wilson, president, said. "We have 1800 square feet of offices adjacent to Hangar No. 2 of Memphis Aero Corp., where we keep our two Cessna 180 planes."

Wilco Machine Works is active in engineering and equipment sales in the debarking-chipping, veneer-plywood, and general woodworking machinery fields. The company also manufactures the Wilco refuse burner, special woodworking machinery, conveyors and other components, and rebuilds woodworking machinery.

Crandall Corp. Starts Construction On New Factory

Rumney, N. H., is to have a new industry, and construction has already begun on the new building. The Crandall Corporation plans to manufacture laminated oak flooring in a new plant there.

The Rumney plant will be the first production plant of the corporation to manufacture laminated oak flooring. The machinery for the plant will arrive in a month or two, and first production is expected May, 1957. A total of 15 employees will be the initial number needed, but this number will be quickly doubled with two shifts.

The Crandall process, protected by U. S., Canadian and English patents, claimed to be the first commercially practical process for continuous lamination of wood strips. Simply stated the Crandall process is as follows: top, bottom and center strips (the center can be parallel or cross grained) are fed into a press, permanently bonded with synthetic resin, and emerge as a continuous board of the finished product. Crandall is the first to agree that it is not the lamination that is new. What is new is a process and a continuous press operation that makes lamination economically feasible for mass-consumer products such as flooring, structural dimension lumber, siding, sheathing and even wall panels for homes and factories.

Appointments and Promotions

Donald J. Bolle has been appointed district sales supervisor, Coated Abrasives Division, Armour and Company, Alliance, Ohio. Mr. Bolle will supervise sales in the northern section of Indiana.

The Union Tool Corp., Warsaw, Ind., has announced the appointment of **Myrle V. Baker** as director of special projects.

Robert J. Sutton has been named director of purchases at Atkins Saw Division of Borg-Warner Corp. Sutton will continue in his present post as secretary-treasurer of the Indianapolis firm, in addition to his new responsibilities.

Protection Products Manufacturing Co., Kalamazoo, Mich., announces the election of **Harry V. Fox** to the chairmanship of the board of directors. Mr. Fox has been president of the firm since 1953. Succeeding Mr. Fox as president is **Stanley O. Hall.** He has served as vice-president and general manager since 1951.

Lawrence H. Price is chairman of the membership committee for the American Institute of Timber Construction. The A.I.T.C. promotes technical advancements in engineered timber construction.

Rovan A. Wernsdorfer has been appointed northeastern regional service manager of the Black & Decker Manufacturing Company. The post was created recently as a result of the portable electric tool company's divisionalization when its nationwide chain of product service branches was formed into a separate division apart from its sales force.

The National Hardwood Lumber Association has chosen **M. B. Pendleton** to serve as secretary-manager. For the last six years, he has served as assistant manager. This association has more than 1600 member companies.

Ned I. Malcolm has joined the Hyster Company as sales promotion representative based at the Danville, Ill., plant. In this newly created assignment, Malcolm will coordinate promotional programs in the Eastern Industrial Truck Division and will assist Hyster's Eastern Division dealers in formulating local promotional programs.

Paul V. O'Daffer, San Francisco power tool expert, has been appointed a district sales manager for the Rockwell Manufacturing Company's Delta Power Tool Division. Mr. O'Daffer will cover most of northern California, Nevada, Utah and part of Wyoming.

Carborundum's board of directors has recently elected five vice-presidents: **Niles C. Bartholomew, Gene DeMambro, I. Wendell Hamm, Joseph S. Imirie** and **Leslie E. Simon.**

Acme Steel Company has announced a reorganization of its top management. **Fred M. Gillies** has been elected chairman and chief executive officer; and **Guy T. Avery** is now president and chief administration officer. **Carl J. Sharp,** former chairman, continues as chairman of the executive committee.

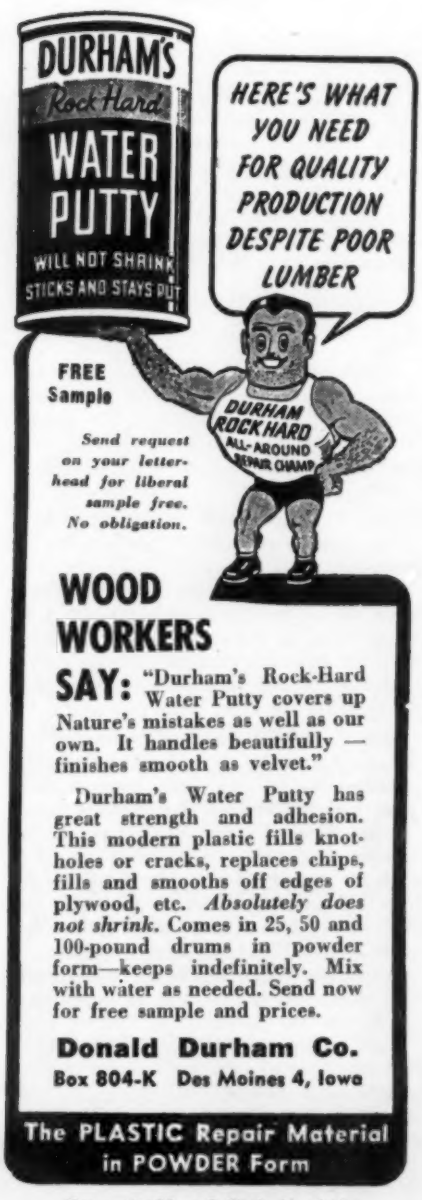
Eugene J. Sullivan will become vice-president in charge of sales for the Borden Company's Chemical Division. He was formerly general manager of the Resins and Chemicals and the Polyco Monomer Departments.

Herbert E. Ihrig has been appointed manager of marketing administration and personnel development for General Electric's Metallurgical Products Department, Detroit. The promotion is Ihrig's second in four months.

Thor Opens Two Branch Offices

The Thor Power Tool Company is opening a branch office in Richmond, Virginia, and also one in Indianapolis, Ind. Kenneth V. Bennett, formerly Philadelphia district service engineer, will manage the office in Richmond at 2024 Chamberlayne Ave.

Richard E. James, Jr., will direct activities at the Indianapolis office which is located at 1489 N. Harding St.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YEAR AROUND TAX THINKING

Long-range tax planning in today's business world of high tax rates is no longer "big business foolishness." Last-minute tax worrying with no year-around tax thinking can result in the loss of sizable savings for small and medium-sized businesses when it comes time to file a tax return! For example, assume that last summer you were forced to replace your air conditioner. You shopped around and found you could either sell your old unit to a private party for $500, or a dealer in town would give you a trade-in allowance of $500 on it. That seemed like six-of-one-half-a-dozen-of-another to you; so without thinking—or worrying—about tax matters you traded in the old air conditioner.

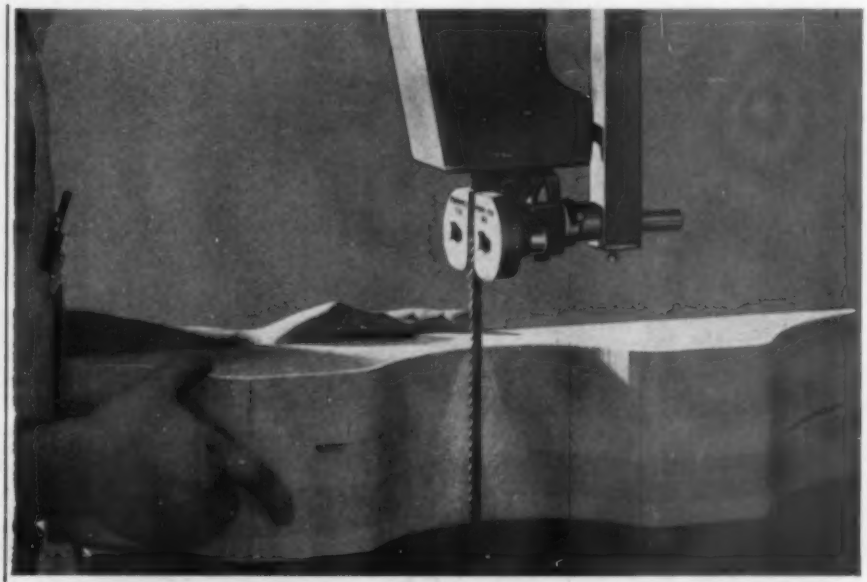
To prove how a seemingly simple business decision such as this can affect how much tax you will have to pay, let's assume further that the air conditioner which you traded had originally cost $2500 and that you had taken $1000 in depreciation on it. This meant its cost for tax purposes was $1500, and you were going to "lose" $1000 whether you accepted the dealer's trade-in allowance of $500 or sold to the private party for $500.

So far still six-of-one-half-a-dozen-of-another, but now since you elected to trade-in your old air conditioner, let's see how you can claim a deduction on a tax return for your $1000 loss. The answer is simple. You can't. All you can do is add the amount of the loss to the cost of your new unit, and eventually receive tax credit for your loss in the form of slightly higher depreciation deductions. On the other hand, if you had made a bona fide sale of your old unit to the private party and a separate purchase of a new unit from a dealer, you would have established a $1000 loss which could be claimed as a loss deduction on a tax return and used to offset regular income.

It is not always true, of course, that a loss deduction on the tax return is worth "two in the bush" of depreciation, but a general rule to consider when you are trying to decide whether it would be more advantageous taxwise for you to sell or trade-in an asset is: sell "loss" property to obtain a deduction, and trade "profit" property to avoid the tax which must be paid on any profit realized from the sale of an asset.

You may find that you have sold yourself into a capital gains tax or traded yourself out of a loss deduction if you have not figured your depreciated costs correctly. This is a matter you should discuss with a certified public accountant. Not only can he verify the accuracy of your mathematical computations, but he can also explain the advantages and disadvantages of the various methods used to compute depreciation. It could be that the method you used or are using is not the one most suited to your business needs from a tax standpoint.

For example, if you asked a CPA whether you should use the straight-line or declining balance



"our saws are *always* in proper condition"

At the Falk Corporation of Milwaukee, Wisc., band saws used in the pattern shop and crating department are kept sharp and fast cutting by their Foley Automatic Saw Filer. One man does it in five hours a week. Not only do they save time and money sharpening their own saws, but more important is the service advantage that assures immediate precision sharpening of all saws as needed—always in proper condition!

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Data on this installation and others, as well as information on how to increase your sawing production 25% to 40%, on cross-cut circular, band and hand saws, is contained in this 56-page book. Request Manual No. 100—no obligation.

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method to depreciate your new air conditioner, one of the first questions he might ask you would be: what are your cash requirements and what are your profits likely to be? If you are thinking of expanding and need additional cash within the next few years, he might recommend that you use the "new" declining balance method to compute depreciation.

The declining balance method "speeds up" or increases depreciation rates. This starts the chain reaction to your objective of retaining cash in the business, because when you increase depreciation rates you also increase allowable depreciation deductions on your tax return. The amount you may write-off the first year is twice what it would be if you used the straight-line method; so by applying a $1000 instead of $500 depreciation deduction against your regular income, you are going to reduce your taxes, and cash that does not have to be paid out in federal taxes can be retained in the business for expansion purposes.

It seems all good things eventually come to an end, however, and while in the first year the declining balance depreciation rate may be double that of the straight-line, this differential diminishes in succeeding years until declining balance deductions are even less than they would be under the straight-line method. This is why it is important that you consider current and future earnings before you select a depreciation method.

For example, if your current earnings are low, or if you are putting in a new line of merchandise and the results of this expansion will take a few years to show in your earnings, it might be more advantageous taxwise for you to use the straight-line method of computing depreciation.

The straight-line method does not "speed up" depreciation deductions. It spreads them out equally over the estimated useful life of the asset; so when you use a straight-line method you are saving, in a sense, for a rainy day. When your earnings improve or increase, you will have more substantial depreciation deductions to apply against those earnings. There usually is no point in increasing a loss or reducing low earnings by claiming additional depreciation deductions when you do not need them.

A point to remember when you are trying to decide whether to buy new or used equipment is that second-hand equipment must be depreciated by the straight-line method. This tax factor should be considered, because loss of the opportunity to use the declining balance method with its rapid write-off feature may cancel any immediate savings effected by the purchase of used equipment.

The matter may have been decided and forgotten many years ago, but a basic question businessmen should consider from time to time—and one which has many tax implications—is whether to do business as a proprietorship, partnership or corporation. There may be personal or professional factors that force the selection and maintenance of a non-corporate form of organization, but depending on the earnings of the business and the amount of those earnings you may have need to withdraw, there are certain tax advantages to be gained by incorporating a new or expanding company.

Since proprietorship and partnership income is taxed at individual rates, which range anywhere from 20% to 91%, and corporation earnings are taxed at corporate rates of 30% on the first $25,000 earned

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Planes stock ⅛" to 7" thick
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The Whitney 97 Double Surfacer, the last word in modern planer design, is built to handle your double surfacing requirements. Its rugged proportions and faster feeds permit it to handle easily the volume production required in today's modern plant. Traditional Whitney accuracy and careful workmanship assure smooth, accurate planing, continuous production, low cost maintenance and the stamina to produce best results under the severest kind of service.

The Whitney 97 will bring to your plant a new conception of production efficiency and cost savings. High production quotas will be maintained and sanding and finishing costs substantially reduced. Investigate today the Whitney 97 for your double surfacing requirements. Write for full particulars. Ask for planer bulletin D 1.

Check these features
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during the year and 52% on the excess, it might appear that if you have relatively low income the proprietorship-partnership rates are lower. However, you must also consider that the corporate tax carries with it the privilege of deducting a reasonable salary paid to an employee-owner. The employee-owner has to pay a personal tax on his salary, of course, but if he were not incorporated, he would have to pay a personal tax on all the money earned by the business.

If the retained earnings of the company are taxed at a corporate rate which is lower than what the personal tax rate would be, the employee-owner would benefit by having additional funds available in the corporation for expansion purposes. These funds may be accumulated in a corporation up to $60,000 without further tax penalties, and even higher if the corporation can prove a need for them.

These advantages—while they may cut your current tax bill and increase working capital for expansion needs—can be lost if you have jumped into a corporation without first reviewing your own long-range cash requirements. If you are continually forced to withdraw money from the corporate earnings to pay personal expenses, you will have to withdraw these funds in the form of dividends. That means the corporation will have to pay tax on the earnings you are withdrawing as dividends, and you will have to pay tax on the dividends received. The "double tax" on earnings and dividends can nullify any tax advantage from incorporation when earnings must be withdrawn immediately as dividends.

Many businessmen seek professional advice about tax matters as they do professional assistance with their golf game—when the slice has become almost unbearable. You can save tax dollars by realizing that business decisions made in the fall affect the amount of tax you must pay in the spring. Practice year-around tax thinking, and consult a certified public accountant when you are in doubt as to the tax effect of even the most routine business decision.

This article is based on information supplied by the American Institute of Accountants, the national professional organization of certified public accountants, and checked for technical accuracy by the Internal Revenue Service.

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'Fast Feeding and Precision' Production PAY PROFITS!

The high, sustained cutting speed and pattern precision of Lineberry Cutter Heads and Knives add up to profits for you. Lineberry Woodworking Cutters are the result of years of study and experience in the making of fine cutters. Engineered to your exact needs and specifications and warranted to give the utmost in quality production. It will pay you to know more about Lineberry Cutters and service. Write for catalog.

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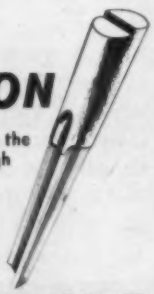

Millions of production hours in many, many plants over the years prove the superiority of Lineberry Red Tang High Speed Steel Router Bits. They give the ultimate in true running, smooth cutting and long-lasting performance. In all standard sizes or made to order in any diameter or length. Write for catalog.

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File, Set and Joint
BAND SAWS
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Two Machines Does Work of

Fully automatic. Insert saw, then forget it. Speed, 60 teeth per minute. Does the work of two machines in half their time. An important and exclusive K5 feature is that file enters gullet at an angle, thus preventing it from dubbing off point and slipping over to next tooth. This insures keen, fast cutting teeth—absolutely accurate and uniform.

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DID THIS PROBLEM HAVE YOU BUFFALOED?

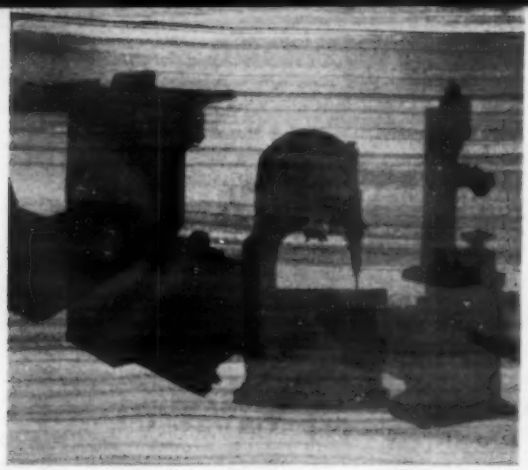
This problem service will cover forest products industry problems which pertain to research, development, production or utilization in all fields of the industry, from forestry and logging through finishing and packaging. Specialists in these respective fields will give practical answers to specific problems addressed to the PROBLEM EDITOR of this magazine. This month's report by Elliot D. May, Baxter D. Whitney & Son, Inc.

The automatic shaping lathe is especially noteworthy in that it can produce turnings of other than circular cross section. By the use of a master cam-like guide, a square, hexagonal, octagonal, or almost any shape can be turned on this versatile machine. It consists primarily of work holding and driving centers, and a cutterhead arbor. The cutterhead rotates at 3600 r.p.m. and the work at a variety of speeds from 2 to 30 r.p.m. Special work holding devices permit the turning of Queen Ann feet for upholstered furniture or permits continuous feeding for shaping square tapered legs. The setting of the cutterhead on this machine is most important. This lathe is well adapted for turning round or square chair legs, table legs, bed posts, various furniture parts, as well as a variety of unusual shapes turned by the use of special fixtures.

Modern furniture designs call for unusual shapes which sometimes cannot be produced satisfactorily on the automatic shaping lathe. Because of the limitations of the proportionate changes in tapered turnings, a multiple spindle carving machine can be used for such work. In this machine several spindles, all provided with straight cutters, are operated from a common driving motor. The workpieces are held between centers and the cutters are guided nearer or farther away from the center of the workpiece by means of a master pattern against which a follower roll guides the pantograph arrangement of the cutterhead pivoted housings. The work is carved by a succession of forward cutting and backward idle strokes. On each successive stroke the work is indexed a portion of a turn until the whole piece is completed. These machines are good producers and once loaded are automatic.

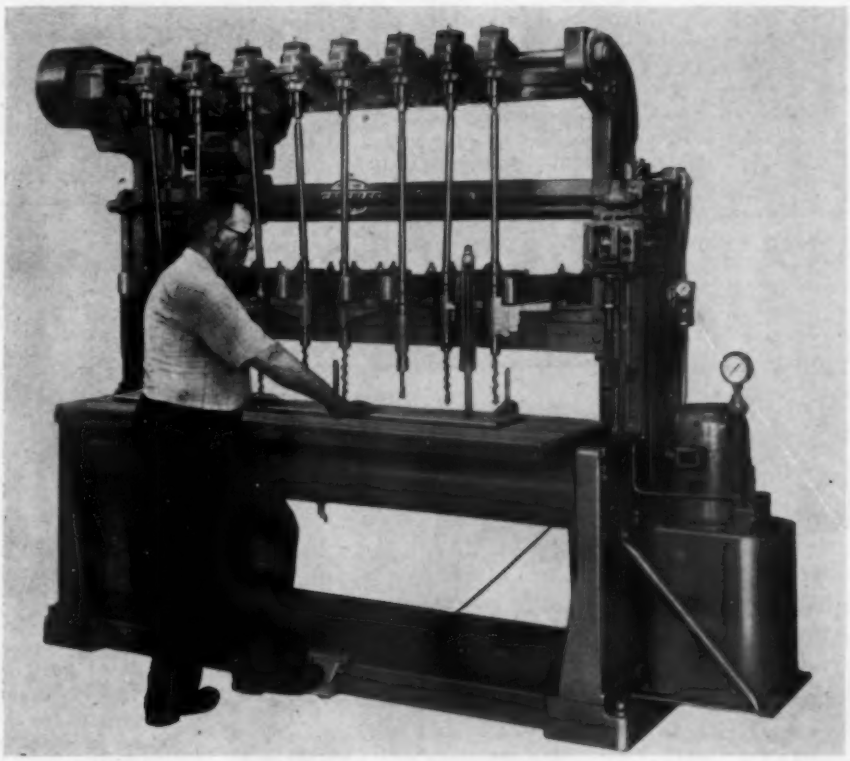
The backknife lathe is the "work horse" of the furniture industry. The Windsor chair is composed largely of turnings usually produced on the backknife lathe. This machine is limited to circular turnings although it is possible to leave square portions on a given turning. The backknife lathe is primarily provided with a head and tail center, a power-driven carriage which carries the rough and smoothing tools and a sash at the rear of the machine which carries a knife bar and back knife. The operation of the machine is simple. Once adjusted for a particular job, the tail center is stationary and the head center moves to dog the work. The head may be belt driven or motor driven. When motor driven, the motor is usually mounted directly on the arbor and is usually of the two-speed type. The carriage travels from the tail center to the head center by one action of a feed screw. A fixed knife on this carriage usually sizes the work to fit a round die which also travels along with the carriage. This die guides the long slender pieces to prevent chattering and also steadies the work while the follower knife roughs out the general shape of the workpiece. This is done by means of a pattern which guides the follower up and down so that the knife traces the approximate shape of the finished piece. As soon as a portion of the knife is turned, the back knife which is mounted in an angular manner at the rear descends in a guillotine arrangement to shear off a light cut and finish the piece to exact dimensions. This shearing operation removes about 1/64". The whole operation is rapid and efficient. Pieces may be turned at the rate of from three to eight per minute depending on shape and size.

Answers to other problems concerning equipment, methods or materials at the 11th Annual National Meeting to be held the week of June 23-28, 1957 at the Hotel Statler in Buffalo, N.Y. Information about this important international event may be obtained from the 11th Annual National Meeting Committee, Forest Products Research Society, Box 2010, University Station, Madison 5, Wisconsin.



equipment and supplies

New Hydraulic-Feed Gang Borer



New efficiency and accuracy in wood boring has been made available with the introduction of the Greenlee No. 308 hydraulic-feed, universal-spindle gang borer. With many new and desirable features this machine, with a 1" to 12" stroke, fills a definite need in the medium work range for furniture, cabinet, and other wood products manufacturing.

This borer, with its variable feed and positive control, brings out all of the most desirable features of hydraulic feed. A wide range of work can be handled, with a spindle feed rate of from 30" to 135" per minute, depending on the size and depth of hole and the kind of wood being bored. Precision boring depth is set by a graduated threaded sleeve on the spindle carriage control arm which provides accurate micrometer control of the feed stroke reversal point.

Instant operating control, through a 4-position foot pedal, provides a choice of either a single or continuous operating cycle. Both operating cycles are identical except during the continuous cycle when the control arm strikes the upper stop collar a new cycle is started and the spindle carriage descends. Immediate reversal of the feed stroke is obtained in either cycle by depressing the control pedal to the back or emergency reverse position. The spindles then return to the up position and stop.

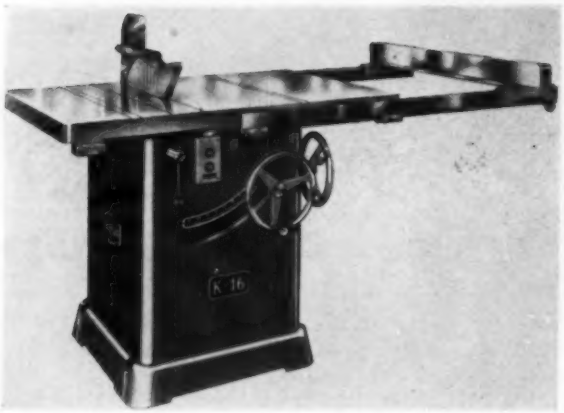
One of the most important new advancements incorporated in the No. 308 is a stationary table with the spindles feeding into the workpiece. Since the operator does not have to concern himself with table position, this feature means easier feeding and less operator fatigue. The rigidly supported spindle frame moves vertically in gibbed ways between two heavy end frame castings bolted to a heavy cast-iron base. In conjunction with a constant table height this open back construction allows work to project through, or be removed from, the rear whenever desired. This feature also makes it possible to use a hopper feed unit when production warrants. Elimination of the center column in this design makes it unnecessary to angle cross arms excessively.

The specially designed hydraulic system of the No. 308 has many extra features. A special valve arrangement prevents surging or uneven action of the feed stroke. In case of a build-up beyond safe operating and boring pressure a safety relief valve on the pump unit allows the oil to by-pass the 4-way valve.

The borer is made in two nominal sizes of 4' and 6' with spindle motor drive to suit each individual requirement. For more information ask for bulletin No. 308. Greenlee Bros. & Co., Rockford, Illinois.

Attachment For Saw

A new attachment is now offered for the Newman K-16 precision tilting arbor saw which provides for accurate ripping up to 48" wide. This attachment



is a micrometer box type rip fence with rack and pinion adjustment.

This fence adjustment control engages both the front and rear guide rails. Rotation of control crank moves both rails simultaneously and carries fence in perfect alignment with saw (at any setting) from 0" to 48". Scales are provided for accurately setting fence on either side of saw. A handwheel is provided on the control crank for locking the rails on both sides of the table. The fence may also be set and locked to the rails, front and rear, at any desired position.

The K-16 has a cast iron base and column, a direct motor drive with 5 h.p. motor and is equipped with a 16" saw blade which projects 4" above the table at 90° and 2½" at 45°. Additional information is available from the Newman Machine Co., Greensboro, N.C.

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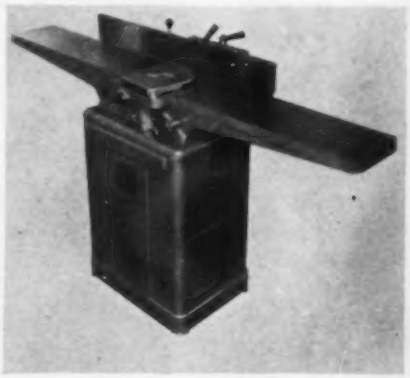
New Jointers Introduced by Yates-American

Yates-American Machine Company, Beloit, Wis., is introducing two additions to the J-line of woodworking machines. The new machines, a 6" and an 8" jointer (the J-136 and J-138, respectively) feature a jointer fence adjustment which permits movement of stock at a 10° angle across the cutterhead. This shear-cutting principle reduces impact at point of cut and results in smoother finish to the stock.

The two new jointers are of streamlined design, with safety an important factor. In addition to conventional swing-type guards, a deluxe safety guard is offered which allows stock to pass beneath the guard, giving maximum protection.



Another important detail of the new Yates-American jointers is the individual adjustment for each of the three cutterhead knives. A set of two jack screws at each knife makes it possible to maintain accurate knife settings with ease. Extra-long tables (64" on the J-138 and 50" on the J-136) provide plenty of working surface, while both machines have a rabbeting capacity of ½" depth. Besides the exclusive shear-cutting adjustment, the fence on the new Yates-American jointer tilts 45° in either direction with positive stops provided for 45°, 0°, and 45°.

The new machines, available with or without cabinet, can be powered by any NEMA or odd frame motors—with capacities of from 1/3 to 3/4 h.p., 1 or 3 phase for the 6" jointer; ¾ to 1½ h.p., 1 or 3 phase, for the 8" jointer.

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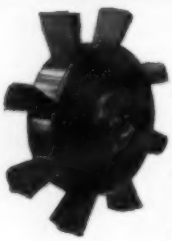
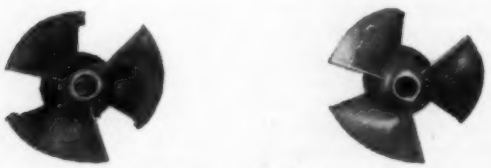
Industrial Defect Saw

The Tri-State Machinery Co., 3000 Commerce St., Dallas, Texas, is offering the Industrial No. 500 air actuated defect saw. This saw with an underneath cut, has a 5 h.p., 220/440 volt, 3-phase, 60 cycle, 3600 r.p.m. ball bearing motor; ball bearing precision arbor. The machine also has a magnetic starter and overload protective switch. The stroke is adjustable from 0 to 90 strokes by

SAND-O-FLEX eliminates hand sanding on propeller blades



A battery of Sand-O-Flex contour sanding wheels are in use at Dynamic Air Engineering Co. of Los Angeles, for cleaning up and satin finishing cast aluminum propeller blades used in aircraft heaters and blowers. Sand-O-Flex removes light burrs and flash, gets in and around the contoured hub and the pitch of the blades in a fraction of the time of previous hand methods.



before *after*

unretouched photos

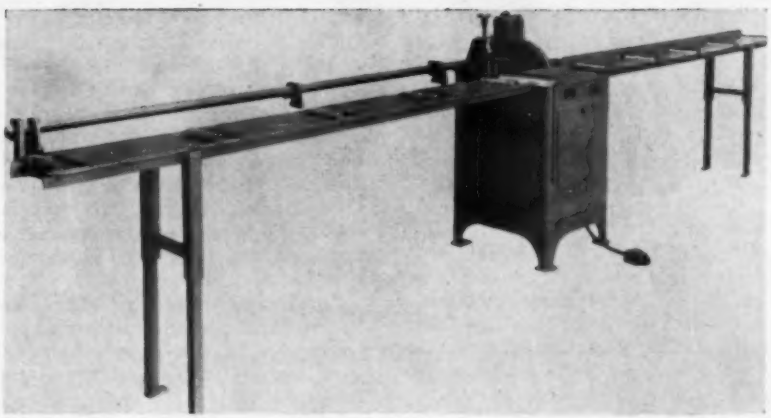
Sand-O-Flex fastens to any turning spindle, no need for special equipment. Use it portably or stationary (as shown). A series of brushes cushion an abrasive cloth as it spins against the work piece and shapes the abrasive against the contour with a "paint brush" action. It is safe; anyone can use it —no skill necessary. If you have a hand sanding or deburring problem, you need Sand-O-Flex. Unlimited uses on woods, metals, plastics, compositions. Specially prepared Sand-O-Flex Abrasive Refills available in a wide assortment of grits for all types of work. The Abrasive is loaded and fed out by a simple patented indexing device in a matter of seconds. Four sizes. Write for free catalog and prices.

MERIT PRODUCTS, INC.

4023 Irving Place **Culver City, California**

Manufacturers of SAND-O-FLEX and GRIND-O-FLEX abrasive tools

Use postpaid card. Circle No. 288



turning and adjusting of small air flow jet. The electrical foot actuating switch can be used for foot or finger tip control.

The illustration shows the saw set up with roller tables—infeed and outfeed. Each is 8' long; standard 12" wide; has adjustable legs and adjustable screws for squaring the saw. There are five 8" ball bearing rollers in each 8' section. Infeed table has back stop. There is a safety guard which clamps wood in place automatically as the saw enters the wood and releases automatically upon completion of stroke. The machine is made for a left hand or right hand setup.

Use postpaid card. Circle No. 40

Unlimited

IN APPLICATION YET ECONOMICAL THRU SIMPLICITY IN DESIGN

The "DOIG"

SPECIAL PALLET NAILING MACHINE

DOIG Special Heavy Duty Pallet Nailing Machine

DURABILITY . . . assures years of trouble-free operation.
Automatic compensating méchanism for clinching different nail sizes.
Heavy duty self-aligning roller bearings drive nails evenly.
Solenoid tripping action; individual motorized drives for table raising, pan oscillating, and main drive operations.
This machine is equipped with an individual track control self-contained feeding unit.
It is capable of driving 16 and 20 penny nails into hard wood.
Can be modified for specific nailing requirements.

DOIG

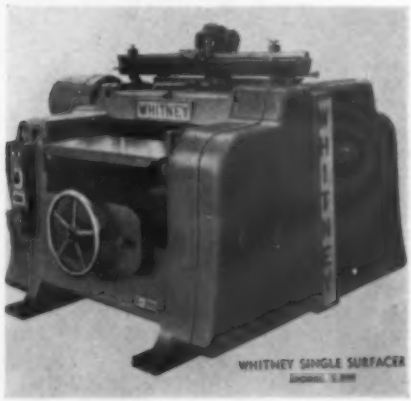
WILLIAM S. DOIG, INC., HAVERSTRAW, NEW YORK

Use postpaid card. Circle No. 289

Whitney Surface Planer

Baxter D. Whitney & Son, Inc., announces the new No. S-290 single surface planer which is built in sizes 36", 40" and 44" wide and 8" thick.

The Whitney No. 290 is of the latest design and is equipped with 4-knife cutterhead, variable feed drive, and motorized power hoist for the bed which is of the wedge type construction.



Additional features which are available for the Whitney No. 290 are simultaneous micrometer adjustment for bottom feed rolls, centralized adjustment of pressure bar, centralized adjustment for top outfeed roll, automatic grinder, and one-shot oil lubrication. This new machine was designed by Whitney engineers, under the direction of Mr. Elliot D. May, chief engineer. The Baxter D. Whitney Company has offices at Greensboro, North Carolina, and Winchendon, Massachusetts.

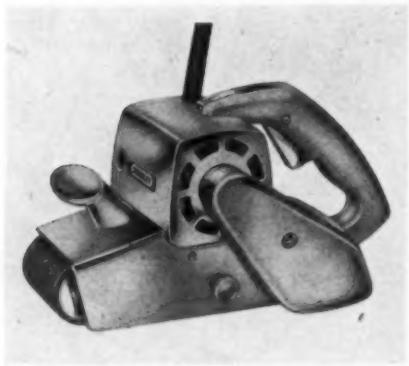
Use postpaid card. Circle No. 41

Stanley Sanders

Two new sanders of orbital and belt design have been added by Stanley Electric Tools, division of the Stanley Works, New Britain, Conn., to its line of portable electric tools. Both the orbital and belt sanders feature Stanley-built air cooled motors, ball bearing construction, vertically positioned "out-of-the-way" cords and perfect balance.

The Stanley H36 orbital sander is a heavy duty tool weighing 6½ lbs. and is 11⅜" long, 3¾" wide and 6⅜" high. Having a pad size of 7-1/16" by 3⅝", the sander makes 4500 orbits per minute. Orbit size is 3/16".

Also designed for flush sanding, this orbital sander can operate efficiently in restricted work areas. It has two handles, a knob-type in front and a comfortable, tapered lever-type handle which has a slide switch for finger-tip control of sanding action. The auxiliary knob-type handle can be removed when sanding close to perpendiculars.



Stanley's 3-inch, heavy duty H31 belt sander has power and ventilating systems designed for maximum sanding power with continuously cool operation. The new sander weighs 15 lbs. and is 13½" long, 6" wide and 7½" high. Belt size is 3" by 24". Idle speed of sander is 1600 sanding f.p.m.

A "D" grip handle with trigger activator combines with a forward "T" shaped handle to give an operator perfect control of sanding operation. By a simple turn of a knob, a special tracking adjustment aligns the belt perfectly every time. The abrasive belt cannot cut into the housing of the sander since a protective carbide strip has been permanently set into the casting.

Another outstanding feature of this new belt sander is the quick-changing of belts which only takes a few seconds.

Use postpaid card. Circle No. 42

Roddis Offers Line of Glue

The marketing of a complete line of adhesives has been announced by the Roddis Plywood Corporation. Included in the new Roddiscraft line of glue is waterproof, plastic urea resin, casein, contact cement and all-purpose glue, a polyvinyl white adhesive. Roddiscraft Waterproof glue exceeds military specifications MIL-A-397B (Type I or II, Class 1). Sold in a two-part unit: liquid resin and powder catalyst, simple mixing is all that is required to prepare the glue for use.

Roddiscraft waterproof glue is an effective barrier against outdoor exposure, boiling water and most solvents. It is ideal for use in boat building, outdoor furniture and other types of critical wood gluing. Bonding of plastic laminates without clamps and installing wood paneling without nails can be effectively accomplished with the use of new Roddiscraft contact cement. This product is a semi-solid neoprene base solvent cement ready to use. This cement bonds on contact. Heat, clamps or presses are not required. Hand-roller pressure is sufficient for bonding.

Roddiscraft casein glue assumes the strength of the material it bonds. This adhesive is designed primarily for work in shops, laminating and furniture manufacturing. Available in powder form, it is ready to use by the addition of water.

Use postpaid card. Circle No. 43

MAKE 30 PROFITABLE PARQUET BLOCKS PER MINUTE from salvagable trim stock on this NEW SARANAC

Automatic Hopper-Feed PARQUET BLOCK MACHINE

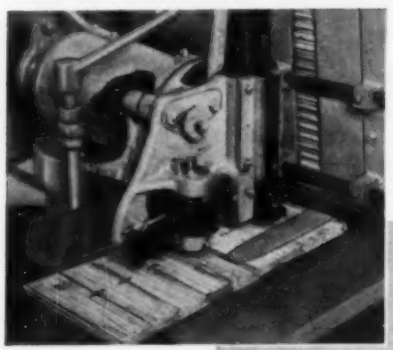


Fig. 3442

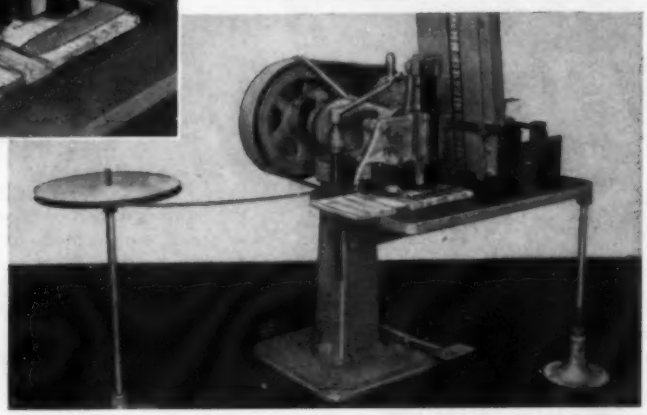


Fig. 3440

Here's the *profitable* answer to a former waste-product *problem!* Using salvagable trim stock, you can produce up to *thirty* 6¾" x 6¾" parquet blocks per minute—or 9" x 9" (four board) blocks at 22½ per minute with one operator.

Specialized for high production, this *new* Saranac Automatic Hopper-Feed Machine drives a sturdy corrugated fastener to link boards together—and automatically skips the space between blocks.

Floor layers *prefer* these blocks for easiest laying. There's no spline to cut off, and boards are quickly separated without need for a hacksaw. With corrugated fasteners, blocks also readily adjust to slight subfloor irregularities.

Machine is adjustable to produce blocks from 6¾" to 13½" square . . from 25/32" to ¼" thick . . and can be connected to a conveyor or directly to the infeed of equalizer and tenoning machine. A squeezing device clamps boards together while fastener is driven.

Use your trim stock for profits! Write today for Parquet Machine data and prices!

SARANAC MACHINE COMPANY
BENTON HARBOR • MICHIGAN

Manufacturers of the World's Largest Line of Fastening Machinery

Use postpaid card. Circle No. 290

New Duro Combination

This new precision unit combines a 10" floor model tilting arbor saw with a 5" jointer and both are operated from a single 1 h.p. motor. The jointer is conveniently positioned to the left of the saw table and when not in use functions as a table extension. A flip of the V belt from one pulley to another (safely positioned behind the saw) puts either unit into immediate operation—automatically immobilizing the other.

The 10" tilting arbor saw is driven by two V belts and is equipped with the new style dual lock pistol-grip rip fence that rides on front and rear tubular guide bars. Cast iron extensions can be bolted together and attached to the right of the main table, offering 27¼" distance from blade to fence.

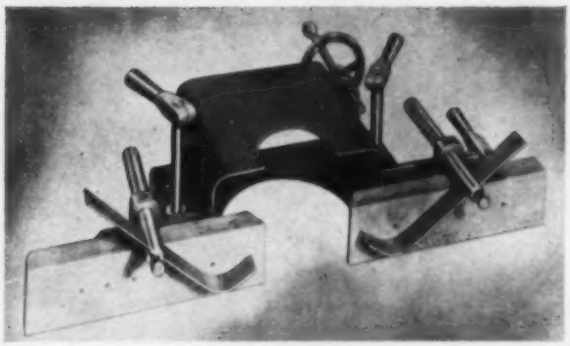
Saw specifications: depth of cut, 3¼"; table size with extensions, 25" x 32";

distance ahead of blade, 10¼"; dado head capacity, 6"; spindle diameter, ⅝".

Jointer specifications: depth of cut, 5/16"; rabbeting capacity, 5/16"; overall length of tables, 26½"; fence tilts in either direction 45°; ball bearings, 2.

For complete specifications, literature, etc., write to Duro Metal Products Co., 2651 N. Kildare Ave., Chicago 39, Ill.

Use postpaid card. Circle No. 44



Shaving-Shute for use on spindle shapers. Effectively removes shavings.

"Shaving Shute," New Fence Design

A new woodworking machine device in the form of an entirely new fence, known as the "Shaving Shute," is being made available by Boice-Crane Company, Toledo, concurrent with the offering of their new model spindle shaper.

Unlike conventional fence design practice which leaves no place for shavings to go but up, the main body member of this rigid, massive new steel box weldment fence assembly is an effective chute for shavings, channeling them back and out. The operator's vision is unclouded by flying shavings and they do not pack around the cutter so as to choke the cutting speed.

Easy, inexpensive connection can be made to a unit type or plant-wide shavings and dust collector. Forms a rear cutting guard, instituting effective guarding behind and above the cut.

The entire 27" fence is a unit, and each fence independently, is adjustable fore and back. Hardwood faces are 2¼" high, each adjustable laterally to suit the cutter diameter.

Use postpaid card. Circle No. 45

FASTER
Smoother Sanding

PEARSON BLOCK & EDGE SANDER

The attachments shown on the table above cannot be used simultaneously, as the type of attachment used depends on the type of sanding required.

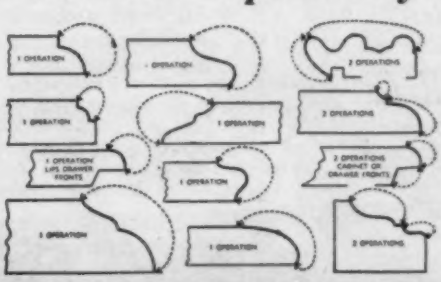
Today, when you must be able to produce the finest surface in the shortest time, at lowest cost, you should have this machine. Sands straight mouldings and round corners in one simple operation. Can also be easily converted to "straight-up" spool sander. Equipped with 3 hp. motor for 5 types of sanding—stationary mould block, hand slide block, curved edge, straight edge and spool (all types of curves). Pearson patented heads fit motor spindle. Write for details.

Here are typical shapes which can be sanded perfectly!

These are but a few of the shapes that can be sanded perfectly with the exclusive Pearson hand slide blocks. The form is lined with high-speed babbitt for longer life. Blocks are for straight mouldings only.

WE SELL DIRECT!
This enables us to personally instruct your operators to get maximum efficiency from the machine.

We also make Scroll and Drum Sanders!



PEARSON SANDING MACHINE CO., INC.
HIGH POINT, NORTH CAROLINA

Use postpaid card. Circle No. 291

Wastewood Chipper

A new wastewood chipper with several innovations of design and manufacture by Sumner Iron Works is announced by the factory distributor, Wilco Machine Works, Inc., Memphis, Tenn.

John Clark, manager debarking-chiping department of Wilco, said the new Sumner chipper features a horizontal feed, 53" diameter disc, 6 knives and is available in an overhead or bottom discharge arrangement.

"Infeed spout size is believed the biggest in this diameter disc available today—8¼" high, 14½" bottom width and 19" top width. Knife angle is designed to eliminate feeding jams," Clark said. Sumner still will build the conventional angle or gravity feed chipper.

A one-piece knife carrier-wearplate of special abrasion-resistant steel 1½" thick covers the entire area between the six knives on the face of the disc. Shaft diameter exceeds 5". The disc is of solid rolled steel. The spout features two removable anvils.

Use postpaid card. Circle No. 46

Crezon Overlay Gains Users

After seven years of research and trial, Crezon—the tough, weatherproof overlay for plywood—graduates this month from Crown Zellerbach's New Products Division into Industrial Sales as a proved, accepted and profitable product.

A new Fiber Division, headed by William R. Works, has been established specifically for Crezon promotion and sales. With Sales Manager Works will be Crezon's district sales representative, J. H. O'Donnell, Seattle, Washington, and E. C. Stadler, Jr., Portland, Oregon. The Division will report directly to E. P. Partland, manager of Industrial Sales, San Francisco headquarters.

Crezon, a resin impregnated cellulose fiber sheet, is applied to the panel and then permanently fused to the wood under heat and pressure in the hot press shown here in the background.

Crezon is a resin impregnated cellulose fiber sheet applied to a plywood panel and then permanently fused to the wood under heat and pressure. It was actually perfected in 1950, but not until mid-1955 was it fully developed and ready for an extensive marketing program. Crown Zellerbach worked with plywood manufacturers and distributors for almost five years to cultivate such markets as siding, signs, boats and handyman panels.

Seven plywood manufacturers are now putting Crezon on their panels. Both Crown Zellerbach and manufacturers will continue to cultivate the present and potential markets with extensive and vigorous advertising and sales promotion campaigns.

Crezon panels are sold by these manufacturers and distributors under the following trade names: Georgia Pacific Plywood Company, GPX Green; Edward Hines Lumber Company, Ehlco-Ply; Mount Baker Plywood, Inc., Crezon Plywood; Roseburg Lumber Company, Crezon Plywood; St. Paul & Tacoma Lumber Company, Plyaloy; United States Plywood Corporation, Duraply; and Walton Plywood Company, Everside, Everlast.

Use postpaid card. Circle No. 47

Columbia Hardboard Co. Formed

Columbia Hardboard Co. was immediately formed, and in October, 1955, construction began on a new panel plant for the company at Everett, Washington. The Everett site was chosen for its central Puget Sound location, and because of its proximity to abundant sources of wood waste. The Everett plant will produce "Cedawood," Columbia Hardboard brand name for the dry process panel produced from cedar waste. Production of Cedawood began late in 1956. The new panel has the following minimum specifications: density: 40 lbs. per cubic foot; MOR minimum: 3800; screw holding, face: 350 lbs. minimum; screw holding, edge: 250 lbs. minimum; water absorption, 24 hour soak: 12%; and thickness swell, 24 hour soak: 6%.

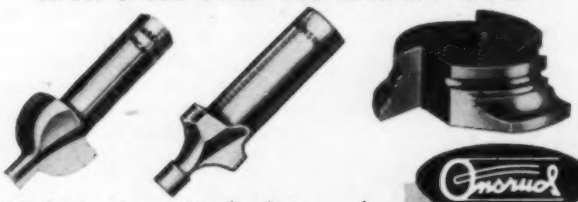
With high MOR and minimum glue absorption when overlaid, Cedawood is designed as an underlayment for hardwood veneer and plastic laminates. In addition, the panel is suited for prefabricated industries. Polyester protective coatings go on easily, and form a tough, resistant surface. Due to the excellent nail holding properties close to the edges, and its ability to be easily sanded or machined, Cedawood is easily adaptable to a wide variety of woodworking operations.

The weaknesses objected to in many felted panels have been alleviated. The finish of Cedawood is consistently "ceramic smooth," with tight finished

DO IT BETTER . . . FASTER . . . and at LESS COST

with ONSRUD SHAPING, COVING and ROUNDING OVER CUTTERS

HIGH SPEED STEEL and CARBIDE TIPPED



Whether you're aiming for better work, faster production, or lower manufacturing costs, Onsrud High Speed Steel and Carbide Tipped wood working cutters add up to worthwhile advantages. Because they cut faster and last longer, they save money for you. Because they cut so freely and smoothly, they'll turn out better work in a given time . . . or more work of a given quality. Here's where Onsrud's design and precision manufacturing really pays off!

It you have cutter problems . . . as you *must* . . . write us about them. Let us suggest a solution, and send full information about Onsrud Bits and Cutters.

Onsrud

BITS AND CUTTERS

FOR
GROOVING
ROUTING
CARVING
BORING
MOULDINGS
MORTISING
ROUNDING
COUNTERSINK
SHAPING
SCARFING

ONSRUD CUTTER MANUFACTURING CO.

801-21 E. Broadway, Libertyville, Illinois

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ROOT RADIAL BORER
Offers Best Value

Style D-150
most modern 2-spindle horizontal borer available

- Hi-Speed Electric Spindles
- Straight or Offset Boring
- All feed movements on large ball bearings
- Foot and Hand Feed
- Fully adjustable for all jobs

The D-150 offers the best value in this type of equipment. Write for free bulletin.

WMMA — Woodworking Machinery Manufacturers Association

B. M. ROOT Co.
YORK — PENNA.

Use postpaid card. Circle No. 293

edges, free from pitted rough spots and voids. Another feature of the new panel is the constant 3800 minimum MOR.

Industrial Development Co., Inc. and Columbia Hardboard Co. are continuing their development with an eye toward finding still more uses for all of our country's forest products. Research is not directed for the benefit of the Columbia organization alone, but rather, for the betterment of all manufacturers of forest products. Industrial Development Co., Inc. has done design and engineering work for the Weyerhaeuser Timber Company on their Klamath Falls, Oregon, hardboard plant, and for the Willamette Fibre and Chip Board, Inc. at Sweet Home, Oregon. Some of the other clients of the development company include Elka Hardboard, Istanbul, Turkey, the Nu-Ply Corporation, Bemidji, Minnesota; and the Coos Bay Lumber Co. of Coos Bay, Oregon. The firm also is engaged on a confidential project for the United States Navy.

Cedawood, newest product of the Columbia Hardboard Company, and a commercial utilization of western red cedar waste, is proving an economical and ideal underlayment for costly veneers and plastic laminents.

The results of these new utilizations of wood waste are not limited to the plywood industry alone. The competitive position of the well-rounded, diversified operation is much better than that of the limited operator. In the interests of conservation, fuller utilization means stretching the dwindling timber resources of our nation.

Sales manager for Columbia Hardboard Co. is Donald Johnson, with Columbia since 1949. Information and sales for the Columbia products are handled through the company's Seattle office, 560 Skinner Building.

Cedawood and plywood are shipped in straight carloads, or mixed carload lots. Another available Columbia product, Kalaboard, which is striated, tough, decorative hardboard panel, comes in ¼" or ⅜" thickness, and may be obtained with a two-ply fir veneer backing.

Use postpaid card. Circle No. 48

The **BONUS** appears in the form of a piece of base shoe that is obtained only because all mouldings are made at one time with the milled to pattern bits shown. If the four cove mouldings were run individually, a 6" board would first have to be ripped into four pieces. When the 6" board is *not* ripped to make the cove mouldings one at a time, the amount of material saved (saw kerfs and allowances for dressing) is enough to make the base shoe.

SAVE TIME by not having to rip the board into four narrow strips for the individual mouldings.

SAVE MONEY by not wasting material in sawdust.

SAVE TIME by feeding only one board into the machine instead of four.

SAVE MONEY by not wasting material in shavings.

This is a typical example of how Badger engineers can help you increase production and reduce costs by designing tools to make more mouldings and fewer shavings.

WRITE TODAY — asking for Bulletin #200. This new illustrated bulletin gives you a complete list of BADGER Clamp T slot heads for standard patterns that can be shipped from stock together with more *time-and-money-saving ideas!*

WISCONSIN KNIFE WORKS
BELOIT, WISCONSIN
Engineers to the Woodworking Industry!

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ARDOX SPIRAL NAILS

The "Ardox" spiral nail—one of the most significant advances in common wood fasteners since the first machine-made nail was produced 180 years ago—is now being manufactured and marketed in the United States by Jones & Laughlin Steel Corporation, Pittsburgh 30, Pa.

J & L is producing the "Ardox" spiral nail under a licensing agreement with the Steel Company of Canada, Limited, which developed the nail and process for producing it after years of extensive research.

Jones & Laughlin is one of the largest manufacturers of nails in the world. It makes over 1,000 different sizes and types.

The extraordinary future of the "Ardox" spiral nail, according to J & L, is based on these advantages over the common nail:

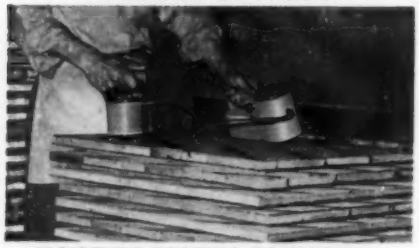
1. It has increased holding power.
2. It is easier to drive.
3. It reduces wood splitting.
4. It costs less per nail.

The threaded nail—which utilizes the same principle as the wood screw—has been recognized for some time as

TAKE 2 WEEK FREE TEST

TO PROVE ELECTRONIC MOISTURE REGISTER

IS FASTER, MORE PRACTICAL PRODUCTION TOOL!



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No obligation except shipping costs. 3-second tests! Portable – spot test anywhere. Practical accuracy to 0%. Anyone can operate. Widely used for lumber, furniture, cabinets, veneer, plywood. Factory-calibrated to your needs–your first defense against moisture problems.

ELECTRONIC MOISTURE REGISTER instruments

The Standard in Moisture Testing

Moisture Register Company, Dept. WDB
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Without obligation, please send full information on instruments for testing wood products, and details on 2 WEEK FREE TRIAL offer. We will be testing _____ in a moisture range from

_____ % to _____ %.

Name _____ Title _____

Firm _____

Address _____

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furniture hardware since 1919

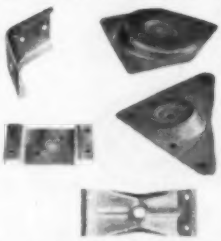
FERRULES WITH BRASS AND PLASTIC SELF LEVELERS

TAPERED AND STRAIGHT FERRULES ROUND AND SQUARE

Genuine brass, finished in satin.

Ferrules designed and finished for the production of fine furniture

Write for information on other metals and finishes



LEG BRACKETS AND PLATES

We manufacture over 900 items and are continually adding to this line

WINZELER STAMPING CO.
29 WABASH AVE.
MONTPELIER, OHIO

Use postpaid card. Circle No. 296

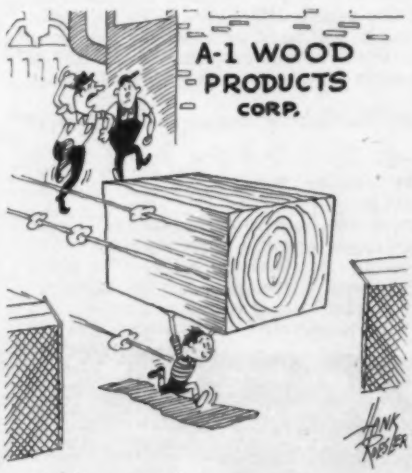
having a superiority in holding power over common or straight-shank nails. However, its use had been restricted because of costly production methods. Each nail had to be threaded separately, or produced by twisting soft wire with subsequent heat treatment—an expensive process.

The process developed by the Steel Company of Canada, Limited, makes it possible to sell the "Ardox" spiral nail at a low price. By this new method stiff stock wire is pre-threaded, then cut, pointed and headed into nails.

The thread form goes right on up to the base of the head, greatly increasing the holding power, an important factor where high holding power is a necessity as in pallet manufacturing and underlay flooring.

Another unique feature of the "Ardox" nail, which has a slightly rounded crest on the thread, is that when it is being driven home it does not cut the wood fibers but tends to push them aside. Later, the wood fibers resettle into the grooves of the spiral, creating extra holding power.

Use postpaid card. Circle No. 49



"I told you to keep an eye on that balsa stock."

Helpful Guide

A cost estimating guide designed to aid the forest products industry forecast economic possibilities of new products and processes has been published by the Oregon Forest Products Laboratory. Co-authors of the 78-page booklet are L. D. Coolidge, head of the Oregon State college department of business administration and J. R. Pfeiffer, wood technologist at the laboratory.

Use postpaid card. Circle No. 50

Revonah Purchases Mummert-Dixon Company

Revonah Spinning Mills, Revonah, Pa., has purchased the entire stock of the Mummert-Dixon Company of Hanover, Pa. The Mummert-Dixon Company manufactures wire cloth machinery, grinders, facing and boring heads as well as special machinery. Management will be under the supervision of Charles A. McGough, Jr., who will be president of the company. Samuel B. Fortenbaugh, who has been secretary-treasurer of Revonah, will also hold this position in the Mummert-Dixon Company. Sales effort and customer service on the present line of products will be increased and engineering studies are being instituted to improve the products; later other items will be added to the line of equipment being manufactured.

An attorney, in arguing a complicated case, had looked up authorities dating back to Julius Caesar and had consumed more than an hour in the most intricate part of his plea when he was pained to observe inattention of the bench. It was as he had feared—His Honor was unable to appreciate the nice points of the argument.

"Begging Your Honor's pardon," said he, "but do you follow me?"

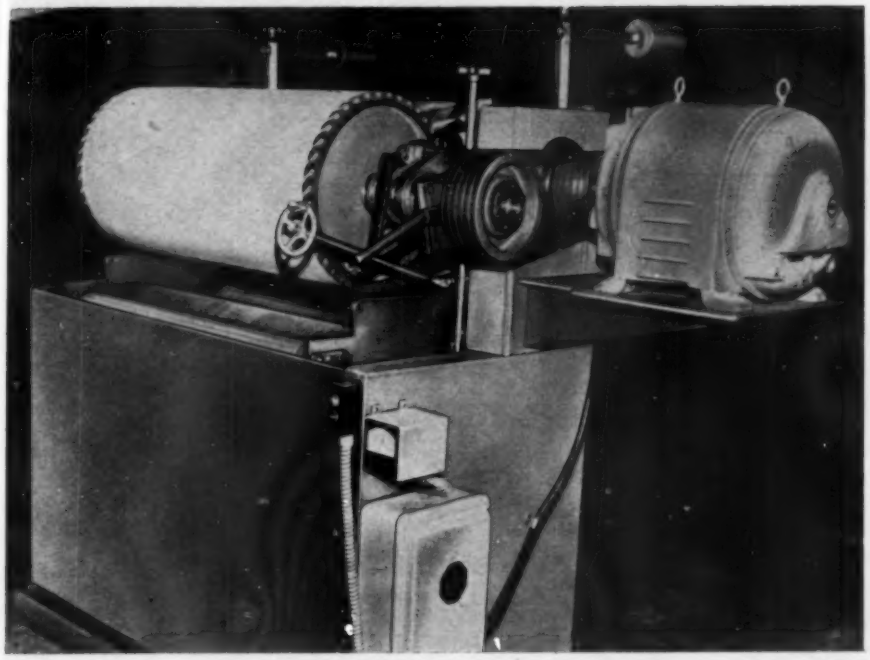
The judge shifted uneasily in his chair. "I have so far," he answered, "but I'll say frankly, Mr. Jones, if I thought I could find my way back, I'd quit right here."

Additional Information About Products Described in this issue of

Hitchcock's WOOD WORKING Digest

is available.
See Action Cards opposite inside back cover.

T-O-P Belt Sander Sands, Polishes



A revolutionary development in belt sanding whereby flat stock can be sanded and polished is now available in the Model T-O-P Speedsander and polisher announced by Timesavers, Inc., Box 7446, Robbinsdale Station, Minneapolis, Minn.

Completely new in design, the T-O-P has an abrasive belt running on top of the work instead of below as on the Timesaver Model SP. A feather touch sanding roll makes it possible to apply any desired pressure for coarse or fine sanding. Adjustable pressure makes the machine adaptable for fine polishing. Sealer or wash coat can be polished without "sand throughs."

White wood can be burnished if such a finish is desired or it can be sanded to the finest point where the wood grain will still absorb a stain. This feature greatly reduces sealer consumption and simplifies the sealer sanding step. To assure positive, smooth feeding of material, the machine is equipped with both infeed and outfeed pinch rolls, adequate dust collection and a rotating brush to clean stock as it comes out.

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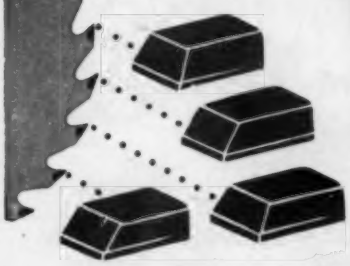
N.H.L.A. Rules Committee Named

Howard A. Hanlon, president of the National Hardwood Lumber Association, named the men selected to make up the 1957 rules committee at a special meeting of the executive committee in Chicago last month.

To the rules committee is entrusted the important task of digesting the various suggestions made by members in the industry regarding grading rules changes or modifications. Those considered feasible are recommended to the membership at the annual convention for final adoption or rejection.

TALIDE CIRCULAR SAW TIPS–Precision molded with clean, sharp edges—and with a special bright surface finish that facilitates brazing.



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Available in 5 standard grades and in many sizes and shapes, for high production service on every type of woodworking operation, including the cutting of insulation board, hard board, fibres, plastics, laminated wood, etc.

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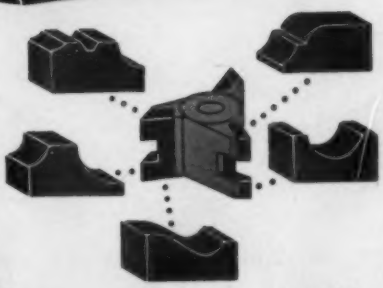

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TALIDE ROTARY CUTTER BLANKS Preformed to accurate tolerance with minimum stock—and to any form or shape desired.

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  Cuts smoother and more evenly
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DECK READY FOR AUTOMATION

Mechanized log turning in southeastern mill.

An example of a deck which is ready for automation is one such as the following: One man on the mill pond guides the logs into the log haul. The log haul chain pulls the logs up to the deck. A second man, by means of push buttons, stops the log haul chain, operates the log kickers to eject the log onto the log deck chains, re-starts the log haul chain, starts the log deck chain and controls the feeding of the logs to the log stop and loader mechanism.

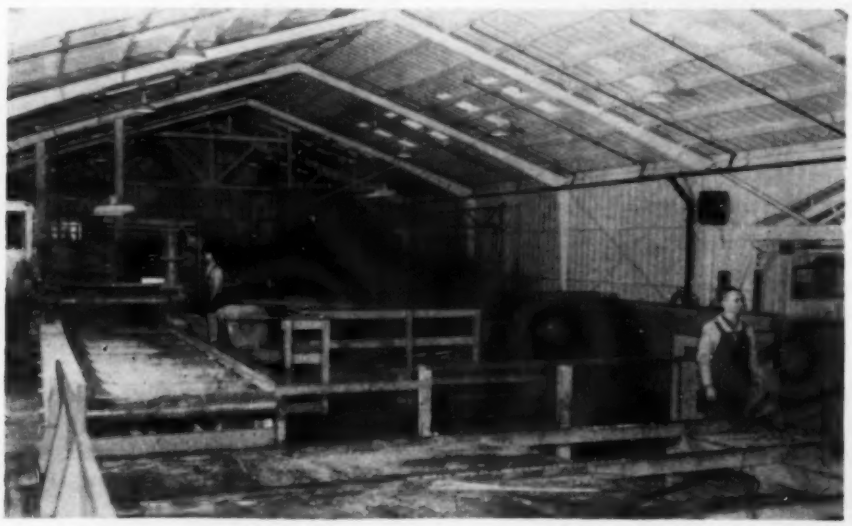
(Many mills are still far removed from a deck as mechanized as this one. They may have two or three men on the log deck, instead of just one).

Applying automation to this deck means eliminating the need for the man on the deck. The only man required is that on the mill pond. The first man on the mill floor itself is the sawyer.

The essential fact of automation is that the man on the deck pushing buttons to start and stop the log haul, start and stop the log deck chains, etc., is replaced by an automatic sequencing cycle. The actual mechanism of the cycle is too complicated to go into here, but, briefly, it consists of a series of limit switches and time delay relays. The sequence of operation is electrically controlled. Most of the physical motion is powered by compressed air.

At the beginning of each shift the log haul is started by a push button. This button starts the log haul motor. The log on the log haul is moved into the mill until it hits a heavy steel plate which activates a limit switch; this stops the log haul. This limit switch also energizes a time delay which activates the log kicker. A photo-electric cell energizes a relay that operates the deck chains and keeps a sufficient supply of logs feeding the log stop and loader. The sawyer then operates the log stop and loader by means of push buttons.

Safety devices are incorporated throughout the sequences of operations. It is necessary to make sure that all the physical deck equipment is checked out and working dependably before trying to control this equipment with limit



Highly mechanized mill with an automated deck.

it's **Enterprise** *that counts!*

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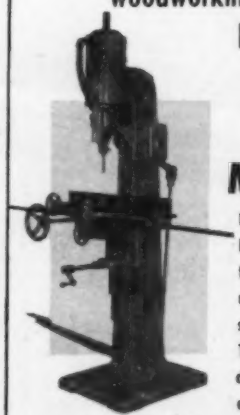
Order "CRESCENT" woodworking machinery by Enterprise



MORTISER

Heavy, well-balanced hollow chisel model for vertical mortising up to ¾ in. square chisel bit. Table tilts up to 45-degrees, with vertical adjustment of 10 in., cross adjustment of 4 in., foot treadle controls vertical spindle movement, adjustable to depth of mortise up to 3½ in.; 2 hp. motor.

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Huge redwood log kicked out of log trough by automated equipment. There are no men needed on this deck.

switch and other automation devices. But when the physical equipment is operating properly and the automating has been done in a step-by-step manner, an automated deck can be operated very successfully.

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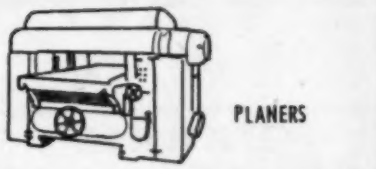

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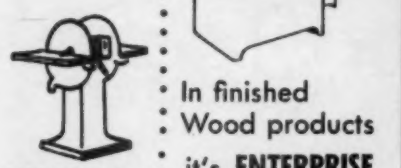

DISK SANDERS

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Metal Detector

The new model TM metal detector automatically signals the presence of unwanted tramp metal particles hidden in non-metallic materials, either packaged or in original state. Typical products which can be inspected automatically, and at conveyor speeds up to 1000 f.p.m. are: lumber, plastics, textiles, rubber, paper, cement, ceramics and stone products.

This metal detector is sensitive to both ferrous and nonferrous tramp metal particles. Contaminated material passing through the test coil causes a reject to operate in the electronic unit. This relay can be used to sound a warning gong, trigger a marking device, or operate a reject gate. Inspection apertures can be made any convenient size and may be mounted in any position to permit passage of the product.

Electronic detection and rejection of products containing tramp metal particles guards product quality, eliminates unnecessary shutdowns due to damaged machinery, and can prevent possible law suits resulting from undetected tramp metal.

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TRACTORS SPEED LUMBER LOADING

Two International 300 utility tractors, pulling Foshee lumber carriers, move lumber on the double at Jackson Sawmill Company, Inc., Jacksonville, Tenn. These highly maneuverable 42 h.p. industrial tractors have five forward gears and can attain a top speed of 16.7 m.p.h. in fifth gear.

One tractor, hauling from the sawmill to curing and storage areas, moves 18,000 to 20,000 board feet a day. The other International 300 hauls 30,000 to 40,000 board feet a day from inspectors to cars during shipping. All trips average approximately one-half mile in length. The Foshee lumber carriers can haul 2,000 board feet a trip.

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Two workmen sat down to eat their lunch. One began to unwrap a package about 18" long.

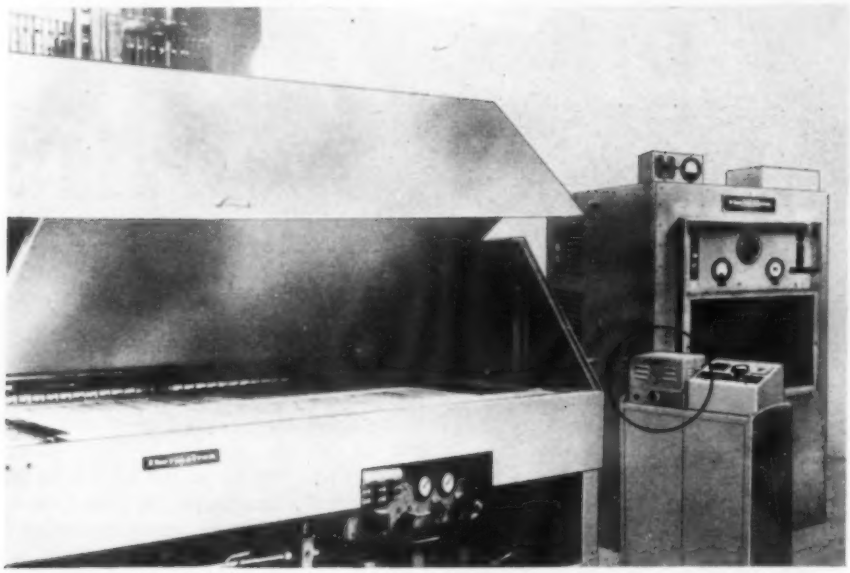
"What's that?" inquired his buddy.

"Oh my wife's on vacation, so I baked myself a pie," he answered.

"A bit long, ain't it?" his friend inquired.

"Long? Sure it is. It's rhubarb."

Thermatron Arc Suppressor



Arc suppressor is in circled area.

A small, compact trouble shooter has been developed by Thermatron Division of Radio Receptor Co., Inc., 251 W. 19th St., New York City, which eliminates costly arcing on RF generators used in connection with wood electronic bonding machines. The new Thermatron automatic electronic arc suppressor detects when arcing is about to happen and instantly cuts off power, saving expensive electrodes and materials from damage.

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Routo-Jig Converts to Six Machine Uses

The Routo-jig, introduced a year ago by Porter-Cable of Syracuse, New York, has been expanded into a six-way portable power tool workshop for cutting, jointing or shaping wood.

The basic Routo-jig serves as a portable router or jig saw. By the addition of several low cost attachments, the new Model 140 now does high-speed shaping, finish sanding, power planing and dovetailing. One motor serves six tools, saving the cost of five power units. Attachments are interchanged in seconds.

The basic Routo-jig, operated as a rotary jig saw, cuts intricate contours as well as performing plunge cuts and regular cut off work. It is especially valuable for making rounded cuts in window valances, corner cupboards and parts for furniture. Internal cuts are made without drilling a starting hole through the material. Because of the cutter's high speed, a smooth clean edge is produced at once, eliminating the need for filing and sanding. An exclusive patented drive pin aids in following curves and contours in free hand work, while the V-opening base permits full visibility where the cut is being made. A front air jet keeps the cutting line continually free of sawdust.

Used with the shaper attachment, the Routo-jig permits shaping and jointing of narrow pieces of any length. Toys, picture frames, and moldings can all be handled with ease.

The sander attachment features orbital action. This permits the duplication of hand sanding with a minimum of effort.

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Checks and Tags. A catalog combining illustrative, descriptive and technical data relating to metal checks, tags, plates, signs, badges and similar products for identifying items of all kinds.

Jas. H. Matthews and Company, 3942 Forbes Street, Pittsburgh 13, Pennsylvania.

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Timber Design and Construction Handbook. This handbook covers the fundamental structures and characteristics of wood. It explores and analyzes preliminary considerations, general design procedure, fabrication and erection; provides design and engineering specifications and tabular data in simplified form, allowing easy conversion for particular grades and species. The book also gives the user a concise tabular reference to fit the many combinations of grade, span and loading.

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Seamless Rubber Belts

A seamless rubber belt that will not stretch, developed by the Armstrong Cork Company, is helping to solve drive and feed-belt problems. An important feature of Armstrong's endless rubber belt is a sturdy, straight-line cord interliner, vulcanized between two layers of tough, synthetic rubber, that keeps the belt from stretching. Because of the belt's non-stretch qualities, an unchanging length is maintained, thus eliminating the possibility of slippage in applications where a positive drive must be held to constantly.

Belts can be made in many lengths, widths, and thicknesses. They can be produced in almost any type of rubber, including nitrile, styrene, neoprene and natural rubber or in combinations. The cord interliner may be any size from fine yarn to tire cord that specific end uses require. The belt is manufactured in both black and white color.

The belts are designed to operate smoothly and quietly even on small diameter pulleys. Their seamless construction does away with the audible "thump" that glued-seam belts may cause when passing over a pulley. They have a built-in resistance to oils, solvents, and ozone cracking, and they are unaffected by changes in humidity.

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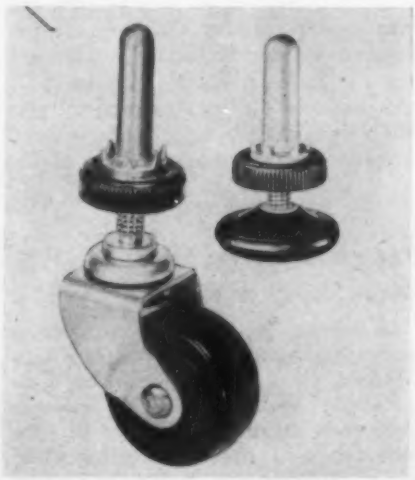
Adjustable Caster or Glide

The Adjustable Caster Company announces a new "Lokswiv" double ball bearing adjustable caster and glide combination which provides fast on-the-spot finger adjustment, designed for leveling, stabilizing and protecting equipment or furniture when used on uneven floors. This innovation in the caster field, incorporates a self-locking adjustment which permits a portable piece to be moved across the floor without the adjustment changing. The design of the caster is such that the 1⅝" diameter phenolic, plastic wheel can swivel, yet the heighth adjustment remains self-locking at all times.

If a piece, such as a typewriter stand, desk, table, etc., is moved to a new location for use where uneven floor conditions are encountered, or legs are partly on or off rugs, instant finger adjustment is available. No wrenches or locknuts are required to lock the adjustment. This self-locking feature is obtained through the use of a spline threaded stem which cannot turn, but is raised or lowered and keyed in the serrated hole in the socket. A captive adjusting nut in the socket does the raising and lowering when turned with the fingers.

An outstanding feature of this design is the choice or alternate use of a plastic base adjustable glide instead of the wheel type. Simply screw out the wheel and screw in the glide. The phenolic plastic base glides are available in 1¼", 1½" and 2" diameter sizes.



The socket part is standard for use with either caster or glide. Sockets are available with welding projections for metal installations, or with screw holes for installation in wooden legs. These are in addition to the drive-on socket for wood installations pictured in enclosed photograph.

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List of Publications on Mechanical Properties and Structural Uses of Wood and Wood Products. List No. 200, presents the titles of more than 600 articles and publications on the mechanical properties and structural uses of wood, joints and fastenings, laminated wood, modified woods, paper and fiber laminates, sandwich constructions, structural timbers, and veneer and plywood.

U. S. Forest Products Laboratory, Madison 5, Wisconsin.

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Figure 321—Lumber Buggy. Large wide tread wheels for outdoor as well as indoor use.

Figure A—Balance style for turning sharp corners. Variety of superstructures and wheel sizes.

Figure 1191—Timber Dolly. Used as a dolly or, inverted as a portable roller.

Figure 2419 and 421—Jacks and Skids. Stores and transports materials with one-time handling. One Jack services many Skids.

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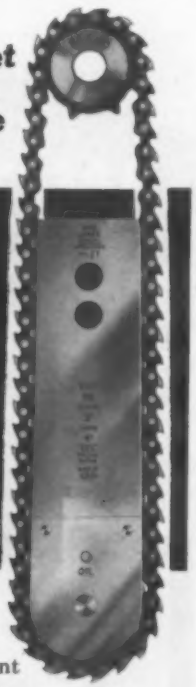

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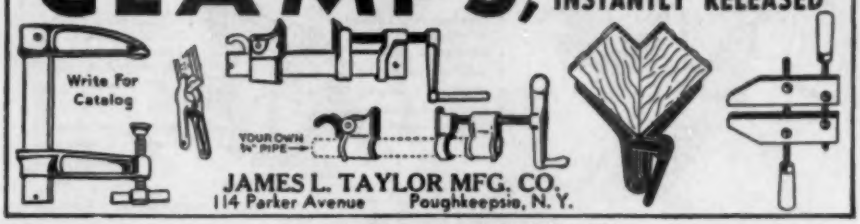

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Dry Process Shaving Board Will Increase Log Utilization Nearly 100%

In the face of increased shortages of quality logs for Douglas fir plywood manufacturing, research in the dry process flakeboard field may be the answer for a high standard panel. A national leader in the dry process utilization is F. L. Johnson, president of the Columbia Plywood Co. Previous to his association with Columbia Plywood Co., Mr. Johnson served as general manager of Anacortes Veneer, Inc. During this time, the firm undertook construction of the first dry process hardboard plant. Dry process eliminates the use of water, and the accompanying disposal of contaminated wastes into rivers and bays. The Anacortes plant was designed to make use of wastes from veneer manufacturing, and proved very successful. Dry process panels produced were found to be competitive with the wet process in both strength and durability.

In 1951, Johnson left the Anacortes firm, and joined the Columbia Plywood organization as its president. He was instrumental in directing the expansion of the company's plywood plant at Kalama, Washington. In 1953, the need for quality panels in all plywood thicknesses and manufactured from wood waste became more apparent. At this time Columbia Plywood Co. retained the services of Dale L. Schubert of Industrial Development Co., Inc. and continued to underwrite development and cost studies for a thicker panel, exceeding ⅜". Early in 1955, Mr. Schubert presented to Columbia Plywood Co. the process and design for a high flexule strength (MOR) three-layer flake panel. The Industrial Development Co., Inc. design provided for manufacture of a panel smooth on both sides, produced by dry process to thickness from ⅜" to 1¼".

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Teco Board Acts to Meet Research Rise

A further investment of $40,000 for additional equipment at the Teco laboratory, to meet the increasing volume and scope of industry's research requirements, was authorized by the directors of Timber Engineering Company, affiliate of National Lumber Manufacturers Association, at their recent annual meeting.

The board's action followed on the heels of the fourth major expansion of the laboratory's plant and facilities, just completed at a cost of nearly $250,000. Substantial increases in research for wood product firms and suppliers to the wood industries resulted in the laboratory's volume of business rising appreciably in the first ten months of this year over last year, Dr. N. V. Poletika, director of research, reported to the directors.

For the third consecutive year, the proportion of research for lumber manufacturers swung upward, while that for wood product manufacturers—particularly in the furniture industry—rose sharply.

For additional information about any of the products mentioned in this issue of Hitchcock's WOOD WORKING Digest, circle the corresponding number on one of the Action Cards, opposite inside back cover. Our Readers' Service Department will be glad to assist you in any way possible.

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Mechanics Through the Ages

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Glue Spreaders, 12" Black Bros. dmd.
Jointers, New Moak 12" bb, dmd.
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Jointers, Porter 24" bb, dmd
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Mortiser, New Britain No. 7 bd. & motor
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Planers, Crescent 24" bb, dmd
Facing Planers: 30" & 36" bb, dmd.
Planer-Matcher, Yates A1-15"x6" round heads, pb, bd.
Redrier, Merritt 12 plate 36x72
Routers, Onsrud, Air 20M speed
Routers, Defiance single spindle high speed dmd
Sanders: Loeffler 24" Sgl. Drum, bb, v-drive
Sanders: Mattison No. 172 Edge belt, dmd.
Sanders, W&M No. 294 stroke dmd
Sanders, Yates No. 421—42" endless bed, dmd.
Sander, G&S dbl. arbor Pneu. dmd.
Sander, Mattison No. 124 stroke
Sanders, Niagara brush, bb, dmd
Sander, 48" double disc, dmd
Sanders, F&E 60" 3-drum roll feed, dmd
Sander, W&M No. 171 belt bb, m.d.
Saws: DeWalt radial 2 HP Sgl. phase
Saws: Amer. No. 1, gang rip, bb. dmd.
Saws, Mattison No. 207, bb, dmd
Saws, Eaglesfield Swing cutoff, bb. dmd.
Saws, Eaglesfield str. line rip bb. dmd.
Saws, Beach double cutoff bb, d.m.d. 4x8
Saws, New Delta-Crescent 12" tilting arbor dmd
Saws, New Multiplex
Saws, Porter C-43, cutoff, bb, dmd. & tables
Shaper, Defiance double spindle, bb-dmd
Shapers: Moak No. 7 & Porter No. 103C Sgl. bb. dmd.
Shapers: Whitney Auto. dbl.
Shaper, Whitney No. 389, double bb, dmd
Shapers, New Moak single spindle bb, dmd
Shapers, Greenlee No. 150 double bb, dmd
Shaper, Whitney double spindle, bb, dmd
Sticker, American No. 1, 1 side 4" pb. bed
Taping Machines, Dennis No. 2
Tenon Heads, single and double end
Tenoner, Hayes 6 ft. double with copes, pb & motor

Many other items, send your inquiries

FOR SALE

THURESON LUMBER COMPANY

Box 146 **Howell, Michigan**

One rebuilt No. 60 Diehl **Glue Jointer** ball bearing direct motor drive with 5 HP motors on arbors, 4 speed motors, 4 knife round heads, 220 volts, 60 cycle, 3 phase.

One new Greenlee No. 227-BM Motor Driven Power Feed Vertical Hollow Chisel **Mortiser** with compound table having vertical and transverse adjustments and longitudinal feed by hand wheel, fitted with stock clamp, adjustable fence with lip hold-down, 6' stop rod and six layout stops, mortising strike adjustment from 2½" to 4" in length and with variable feed drive for making 15 to 52 strokes per minute, totally enclosed 5 HP 3600 RPM motor on the bit spindle, 1HP 1800 RPM self contained motor for variable feed drive, enclosed magnetic push button control, wiring in conduit, spindle brake, built in blower, one ½"x4" chisel and bit, set of chisel and bit bushings and necessary wrenches, capacity for chisels up to 1" square, range for 14" high stock. Current AC 220 volts, 60 cycle, 3 phase, used one year.

Two new 5 HP Frame 26 totally enclosed, dust proof, fan cooled, ball bearing **Saw Arbor Motors**, one with left hand thread, one with right hand thread, still in original crates.

One used Oliver No. 125-D Single End **Tenoner**, ball bearing, complete with motor, in excellent condition.

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Sander, Oakley Model "H" Drawer, 99% new.
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Band resaw, American 48 in., $600
Band saw Filer, Foley, MD, $75
Blower, G C 25 in., single, $75
Blower, Sturtevant 40 in., sgl., $100
Borer, horizontal, single spindle, $50
Borer, G&L Two sp, hor. radial, M.D., $175
Glue Clamp Carrier, Palmer Ferris Wheel, $250
Jointer, 12 in. and single shaper, $185
Miter trimmer, bench type, $35
Molder, Smith, 7 in., 4 side $400
Mortiser, F&E Heavy, vertical auto. H.C. $250
Mortiser, New Britain No. 7 Chain saw, $300
Planers, Pony, 18 and 20 in., $175
Planer, Parks bench, 12 in power feed, $150
Planer, Heavy 25 x 6 sgl., $250
Planer, Crescent 24 in Pony, $250
Planers and matchers, 3 side, 18 to 24 in., $175 up
Ripsaw, F&E heavy duty gang, $350
Sander, Wysong Miles, hd., blk. belt, $185
Saw, B T & B Variety, $100
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Sidney "Famous" 16"

LATHE: South Bend Turning Lathe

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Fay & Egan No. 376
Hermance E-1

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Greenlee No. 228
Sidney "Famous" Figure 704 Hollow Chisel
American No. 20 Hollow Chisel
Wysong & Miles No. 284
Fay & Egan No. 510 Automatic Hollow Chisel

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Fay & Egan No. 340 Single Surfacer
Powermatic, single, 16" x 4"

PRESSES: Francis Veneer

ROD & DOWELL POINTER: Bignell, 2 HP

SANDERS: Mutual Pedestal type
Porter-Cable
Oakley Mod. F, Hand Feed Stroke Belt
Mattison Hand Block Belt
Wysong & Miles No. 176
Oakley Model H-5 Oscillating Edge Belt
Solem No. 370 two-drum endless bed

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Sidney 26"
Silver 26"
C. E. Wright Mfg. Co. 36"
American 36"
American B 36"
Moak 36"
West Side 36"
Tannewitz 42"

BAND RESAWS: Berlin No. 283 44"
Fay & Egan No. 146 Combination

CHAIN FEED RIP SAWS: Fay & Egan No. 999
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Defiance, 25 HP

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Delta 10" Tilt Table
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Mortiser, hollow chisel Y-A No. K25, DMD
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Rip Saw Gang-Dependable No. 111 w/mtr.
Router Y-A No. U-90 M.D.
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Saw Table, Oliver Dbl. Arbor, M.D.
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Must be experienced in Sash Production

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Fay & Egan 5 Spindle Vertical Boring Machine, belt drive and adapted to automatic stroke
Root Style D200 Automatic Horizontal Boring Machine, 2 swing and 2 straight heads, 1 HP ea., 4 years old, Excellent condition
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Whitney No. 39A Double Spindle Shaper, each 5 HP, 7200 RPM, all B.B. with 42"x60" Table, Excellent condition
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Crescent 36" Band Saw, Tilting Table, Excellent condition
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Buss 26" Single Head Planer, D.M.D., B.B. with feed, Good condition
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Whitney Single Spindle Shaper, 3 HP, B.B., Good condition
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Valley City 2-spdl. adj. radial horiz., motor driven
Superior 3-Spdl. adjustable horiz., motor dr.
Greenlee No. 369 multi-spdl., vert. direct motor drive
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Jenkins 3 CD cont. chain feed, direct motor dr., b.b.
Yates-Amer. 213 cont. chain feed, d.m.d., b.b.
Newman No. 60, 16-in. round hd., b.b., d.m.d.
Smith No. 92-A, 16-in., round hd., b.b., d.m.d

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Buss 30-in. No. 4L Sgl. Cabt., direct motor drive
Buss 30-in. No. 4A Sgl. Cabt., direct motor drive
Buss 36-in. No. 8 Dbl. Cabt., direct motor drive
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Ekstrom-Carl. No. 111 edge belt, d.m.d., b.b.
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Ekstrom-Carl. No. 18, pneumatic drum, d.m.d., b.b.
Pearson Edge Moulding, direct motor dr., b.b.
Wysong & Miles 309 disc and spdl., dir. motor drive
American 30-in. disc and drum, motor driven
American 24-in. disc and oscillating spindle
McKnight Vertical oscil. sgl. drum, motor drive

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Porter 45-20S, floor type, dir. motor drive, b.b.
DeWalt Model GR-55 radial arm saw 5 h.p.
Bell 12B dbl-end mitre and cutoff, d.m.d., b.b.

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Tannewitz JS250 tilting arbor, d.m.d., ball-bearing
Tannewitz "F" Tilting table, direct motor drive b.b.
American No. 30 rip and trim, tilt-table, motor-drive

SAWS—RIP
Diehl No. 750 chain feed, direct motor drive, b.b.
Diehl No. 75 chain feed, direct motor drive, b.b.
Mereben No. 336-E chain feed, direct motor dr., b.b.
Hermanse No. 33 chain feed, direct motor dr., b.b.
Greenlee No. 426 Power Feed Gang, motor driven

SHAPERS
Whitney No. 393 auto., ball-b., dir. motor drive
Onsrud W-123 Automatic, multiple stations
Ekstrom-Carlson 162 sgl. spdl. hi-speed, b.b., d.m.d.
Oliver single spdl., hi-speed, ball-bearing, dir. m.d.
Buss Sgl. and Dbl. spdl., hi-speed, ball-brg., m.dr.
Whitney No. 39-A dbl. spdl., ball-brg., dir. m.d.
Porter double spdl., hi-speed, b. brg., dir. mtr. dr.
Superior Serpentine (Buck) hi-speed, b.brg., m.d.

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Bell No. 12-B double miter and cut-off saw
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Greenlee No. 426 self-feed rip, motor-dr.

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Yates No. 431, 43" 3-drum endless bed, m-d
Heath 24" 2-drum roll feed, motor driven
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W & M 294, & Mat. 124 automatic stroke sanders
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W & M No. 309, 30" comb. disc and spindle

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Products Index

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Abrasives, 73
Adhesives, animal, 25
Adhesives, casein, 25, 61
Adhesives, resin, 14-15, 25
Adhesives, resorcinol, 13
Arbors, 47

Band Saw Accessories, 42
Bits, machinery, 10-11, 38, 83, 94, 101, 108, 111, 116
Boring Machines, 9, 29, 108
Boring Tools, 38, 116
Carbide cutting tools, 10-11, 16, 43, 83, 84, 97, 108, 111

Clamping Machines, 87
Clamps, 62, 67, 84, 115
Conveyors, 3
Cutters, 83, 84, 108, 114
Cutter Heads, 10-11, 16, 109

Decals, 75
Dimension Stock, 90, 116
Dovetailer, 111
Drilling Attachments, 98
Drill Heads, 98
Dry Kilns, 21
Dry Kiln Control Devices, 21
Dust Control Systems, 12

Factory Trucks, 115
Fastener Driving Equipment, 106
Fasteners, 40
Fillers, 71
Finger Jointing Machines, 31
Finishes, 70
Furniture Hardware, 110

Glue Room Equipment, 4, 25, 80
Glue Spreaders, 4, 80
Grinders, wood, 91
Grooving Machines, 32
Guide Line Lights, 42

Hanger Bolt Driver, 92
High Frequency Bonding Equipment, Inside Front Cover, 1, 64, 97
Hogs, 91
Humidifying Equipment, 34, 86

Jointers, 9, 24, 78, 113, 119

Knives, 10-11, 43, 81, 92, 109

Lathes, Outside Back Cover
Lathes, back knife, 77, 100
Lumber, 57, 66, 67

Matchers, 32, 35, 88
Measuring Devices, 50
Moisture Meters, 110
Molders, Outside Back Cover
Mortise Chains, 115
Mortisers, 24, 29, 70, 112
Motors, 47

Nailing Machines, 105
Nails, 40

Painting Systems, 68
Parquet Block Machine, 106
Planers, 3, 24, 29, 35, 67, 88, 100, 113, Inside Back Cover
Planes, 74
Plywood, 59, 62, 65
Plywood, molded, 62, 65
Presses, plywood, Inside Front Cover, 1, 64
Punches, 50
Putty, 98

Rough Mills, 3

Sanders, belt, 9, 75
Sanders, contour, 71
Sanders, drum, 107
Sanders, edge, 107
Sanders, portable, 18
Sanders, scroll, 107
Sanding Heads, 104
Sash Pinners, 128
Saw Blades, band, 50, 79
Saw Blades, carbide, 10-11, 97
Saw Blades, circular, 39
Saw Gauges, 71, 114
Saw Guards, 50
Saw Sharpening & Setting Machines, 74, 99, 101
Saw Tips, 111
Saws, band, 9, 48, 78, 113, 119
Saws, cutoff, 9, 17, 30, 66, 71, 96
Saws, mitre, 48
Saws, panel, 42, 66
Saws, radial, 19
Saws, rip, 19, 42, 44, 48, Outside Back Cover
Saws, tilting arbor, 9, 19, 44, 66, 78, 88, 113
Saws, variety, 17, 78
Shaper Collars, 84
Shapers, 9, 29, 66, 78, 89, 100, 113, 119
Spray Painting Equipment, 68
Stackers, lumber, 21
Staplers, 23, 128
Surfacers, 100

Table Equipment, 82
Table Slides, 82
Tackers, 23, 128
Tack Rags, 74
Tenoners, 24, 29, 114
Tongue Machine, 32

Veneer, 57, 64, 66, 67
Veneer Jointer, 52
Veneer Splicer, 52
Veneer Tables, 62

Woodworking Machines, all types, 2, 6-7, 19

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Index to Advertisers

A

AAA Saw & Tool Serv. & Supply Co. 120
Adjustable Clamp Company 62
American Machinery Exchange 121
Amos-Thompson Corporation 67
Anderson Woodworking Company, Inc. 121
Armstrong Machine Works 86
Atlas Press Company 44

B

Bacon Veneer Company, R. S. 121
Bahnson Company 34
Beach Manufacturing Company 66
Bentwood Products Co. 122
Berthelsen Presses ....Inside Front Cover, 1
Beverly Manufacturing Company 71
Biltbest Corporation 122
Binks Manufacturing Company 68
Birds Eye Veneer Company 64
Black Bros. Company, Incorporated 4
Boice-Crane Company 88
Boshco, Inc. 121
Brett-Guard Company 50
Buss Machine Works ....Inside Back Cover

C

Carter Products Company 42
Chicago Brokerage Buyers 122
Click, Mrs. A. Graham (Veneer Tables) 62
Clifton Machinery Company 120
Commander Manufacturing Company 98
Consolidated Machinery & Supply Co. Ltd. 9-71
Cope, John 121

D

Day & Co., Jas. B. 70
Delta Power Tool Division 19
(Rockwell Manufacturing Company)
Denerstein, Ed. B. 127
Detroit Edge Tool Company 92
Detro Sales Co., Inc. 74
DeWalt, Inc. 17
Diehl Machine Works, Inc. G. M. 6-7
Dodds Company, Alexander 111
Doig, Inc., Wm. S. 105
Duo-Fast 23
Durham, Donald (Fastener Corp.) 98

E

Ekstrom, Carlson & Company 30
Enterprise Company 112-113
Erdco Engineering Corporation 64

F

Fader & Company, A. L. 123
Fastener Corporation 23
Fay & Egan Company 120
Field Company, William H. 115
Flack-Jones Lumber Company 120
Foley Manufacturing Company 99
Forest City Bit & Tool Company 94

G

Gamble Brothers Company 116
Gaynes Engineering Company 42
Goodspeed Machine Company 77
Graycon Tools, Inc. 114
Greenlee Brothers and Company 29
Greenlee Tool Company 38

H

Handy Manufacturing Company 87
Harrington, Incorporated, S. W. 120
Harris Machinery Company 121
Hartford Clamp Company 67
Haskew & Company, Inc. 122
Hoe and Company, Inc., R. 10-11
Hotel New Yorker 79

I

Independent Nail and Packing Company 40
Industrial Plants Corporation 126

J

Jecmen Company 121

K

Keller Products, Inc. 62
Kennametal, Inc. 43
Kenner, L. R. 120
Kirk and Blum Manufacturing Company 12
Klok Institute 121
Koppers Company 13

L

Land, Incorporated, L. J. 121
Larson Plywood Company 65
Lineberry Foundry and Machine Company 101
Lodding Engineering Corporation 81
Lundberg, David V. 121
Lundstrom Laboratories 122

M

Marcoloy, Inc. 16
Mattison Machine Works ....Back Cover
McDonald Machinery Company 121
Mereen-Johnson Machine Company 52
Merit Products Company 104
Metal Carbides Corporation 111
Meyercord Company 75
Millbury Machine Company 114
Minnesota Mining & Mfg. Co. 73
Moak Machine and Tool Company 119
Moisture Register Company 110
Moore Dry Kiln Company 21
Morgan Manufacturing Company 90
Muskegon Machine Company, Inc. 31

N

National Adhesives 14-15
National Air Sander, Inc. 18
National Casein Company 61
Newman Machine Company, Inc. 35
Northern Hardwood Veneers, Inc. 66
Northfield Foundry & Machine Company 78
Nutting Truck and Caster Company 115

O

Oakley Company 75
Oliver Machinery Company 3
Onsrud Cutter Manufacturing Company 108
Osborne & Sexton Machinery Co. 121
Owens-Illinois Plywood Company 122

P

Parks Woodworking Machine Company 67
Pearson Sanding Machine Company 107
Perkins Glue Company 25
Powermatic Machine Company 24
Price & Rutzebeck 83
Puritan Manufacturing Company 121

R

Radial Cutter Manufacturing Corporation 97
Raybond Electronics, Inc. .... Inside Front Cover, 1
Reed & Son, Roland V. 121
Richardson Company, J. S. 89
Rockwell Manufacturing Company 19
(Delta Power Division)
Root Company, B. M. 108, 123

S

Sand-Rite Manufacturing Company 71
Saranac Machine Company 106
Saw & Knife Specialty Company, Inc. 79
Senco Products Company 125
Simonds Saw and Steel Company 39
Spee-Flo Mfg. Corp. 122
Spotnails, Inc. 128
Stanley Works 74
Starrett Company, The L. S. 50
Stem, Incorporated, Chester B. 57-121
Sutton Woodworking Machine Company 127

T

Tannewitz Works 48-114
Taylor Manufacturing Co., James L. 115
Thureson Lumber Company 120
Titan Tool Company 92
Tri-State Machinery Company 96

U

Union Tool Corporation 80
United States Plywood Corporation 59
Used and Rebuilt Machinery 120

V

Vance Company, J. A. 88

W

Walter and Company, Inc., B. 82
Wardwell Manufacturing Company 101
West Virginia Pulp & Paper Co. 122
Whitney & Son, Inc., Baxter D. 100
Williams Patent Crusher & Pulverizer Co. 91
Winzeler Stamping Company 110
Wisconsin Knife Works 109
Wood and Sons, Morris 116
Woods Machine Company, S. A. 32-47
Woodward Machinery Company 120
Woodworkers' Tool Works, Inc. 84-121
Woodworking Machinery Manufacturers Association 2
Work-Rite Products Company 97

Z

Zeiller & Nagel, Inc. 74
Zenith Radio Corporation 122

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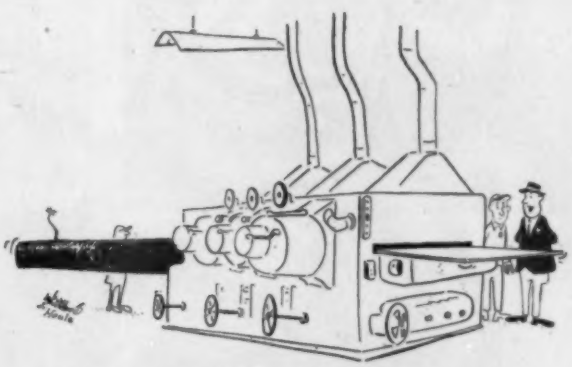

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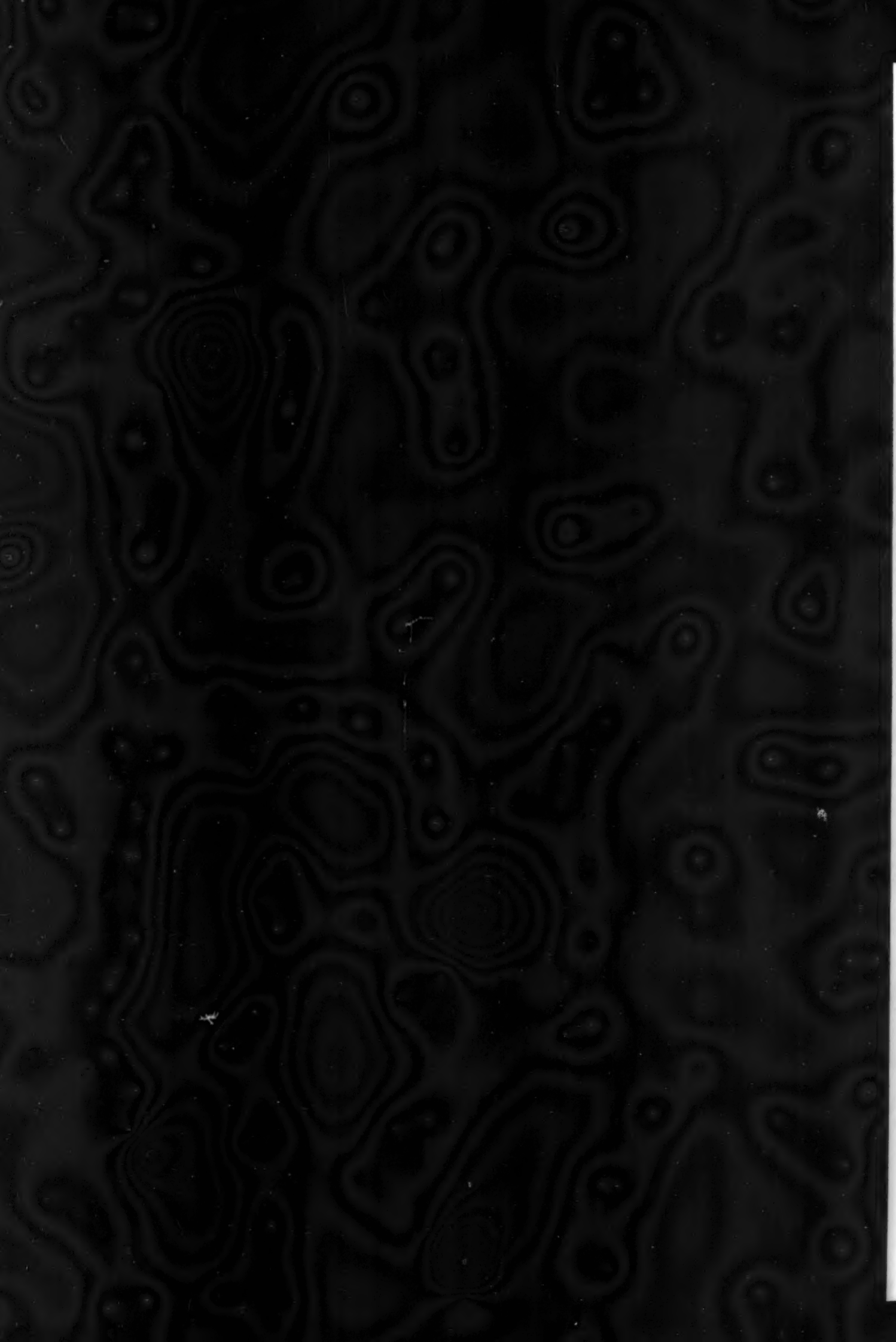

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2	12	22	32	42	52	62	72	82	92	102	112	122	132	142
3	13	23	33	43	53	63	73	83	93	103	113	123	133	143
4	14	24	34	44	54	64	74	84	94	104	114	124	134	144
5	15	25	35	45	55	65	75	85	95	105	115	125	135	145
6	16	26	36	46	56	66	76	86	96	106	116	126	136	146
7	17	27	37	47	57	67	77	87	97	107	117	127	137	147
8	18	28	38	48	58	68	78	88	98	108	118	128	138	148
9	19	29	39	49	59	69	79	89	99	109	119	129	139	149
10	20	30	40	50	60	70	80	90	100	110	120	130	140	150

Advertisements — circle key numbers

201	213	225	237	249	261	273	285	297	309	321	333	345	357	369
202	214	226	238	250	262	274	286	298	310	322	334	346	358	370
203	215	227	239	251	263	275	287	299	311	323	335	347	359	371
204	216	228	240	252	264	276	288	300	312	324	336	348	360	372
205	217	229	241	253	265	277	289	301	313	325	337	349	361	373
206	218	230	242	254	266	278	290	302	314	326	338	350	362	374
207	219	231	243	255	267	279	291	303	315	327	339	351	363	375
208	220	232	244	256	268	280	292	304	316	328	340	352	364	376
209	221	233	245	257	269	281	293	305	317	329	341	353	365	377
210	222	234	246	258	270	282	294	306	318	330	342	354	366	378
211	223	235	247	259	271	283	295	307	319	331	343	355	367	379
212	224	236	248	260	272	284	296	308	320	332	344	356	368	380

Inserts: Inside Front Cover 1A 1B 1C 1D — Inside Back Cover 2A 2B 2C 2D — Back Cover 3A 3B 3C 3D

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Name ..... Position .....

Street .....

City ..... Zone ..... State .....

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WOOD WORKING DIGEST JAN., 1957

CIRCULATION DEPARTMENT
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Name ..... Position .....

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Products .....No. of Employees.....

Street .....

City ..... Zone..... State.....

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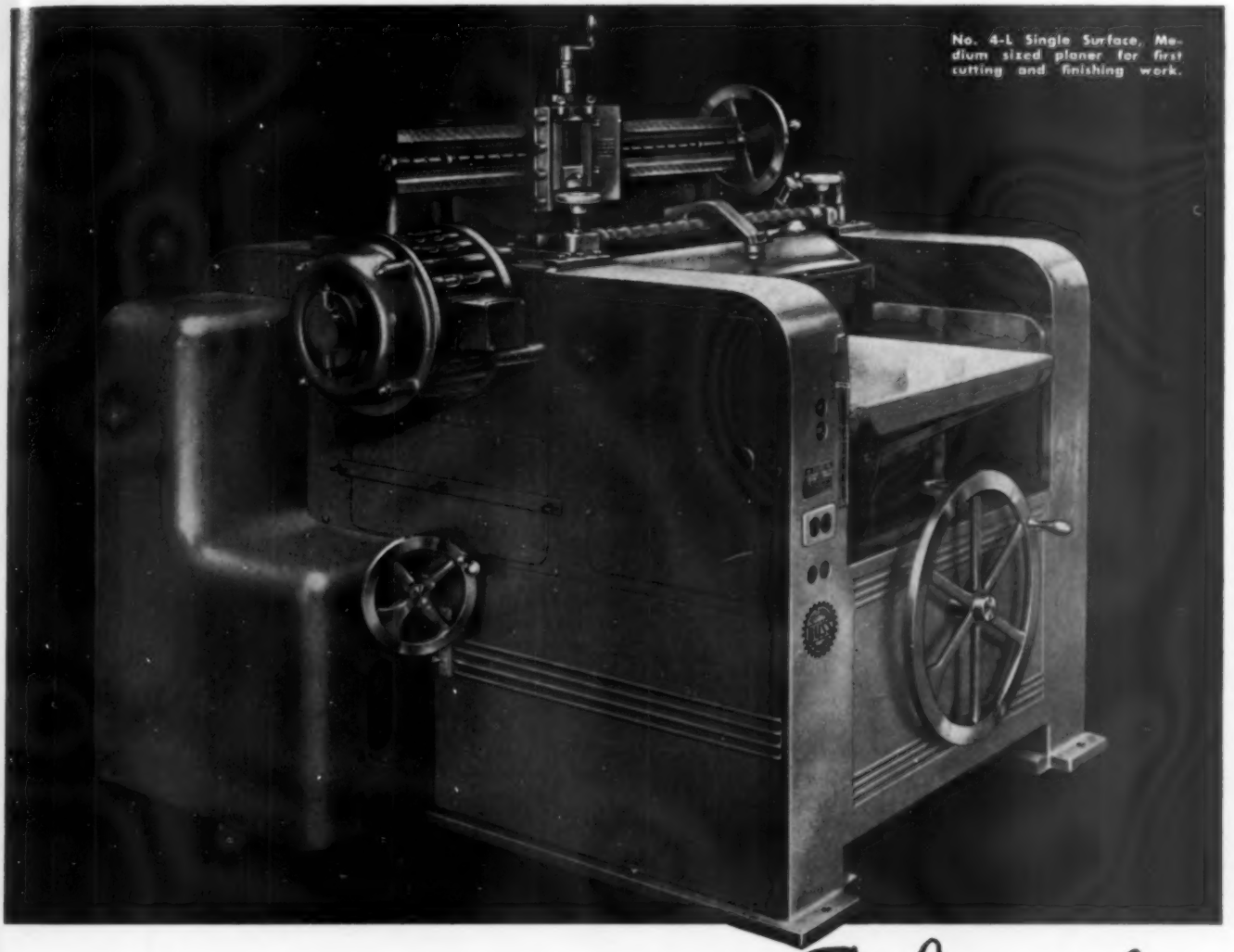

No. 4-L Single Surface, Medium sized planer for first cutting and finishing work.

PRODUCT OF PLANER SPECIALISTS—*Exclusively*

. . . which accounts for the fact that in this model as well as ALL BUSS Cabinet Surfacers you will find more patented, exclusive features than in any other planers . . . features that assure finer finish planing, greatly increased production and long, trouble-free service.

Write for bulletins describing these machines in detail and you will readily understand why we say it is usually far cheaper to own them than to do without them.

6 MODELS
29 SIZES

THERE'S A BUSS PLANER TO EXACTLY SUIT YOUR NEEDS

No. 44 Single Surface, 4 roll planer for first cutting and finishing work.

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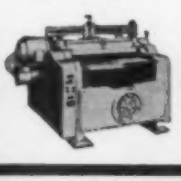
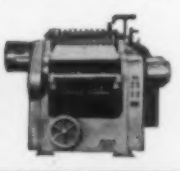


No. 88 Double Surface, 8 roll planer for first cutting and finishing work.

No. 55 Heavy duty Double Surfacer for planing rough lumber.



MICRO-SURFACER for planing hardboard and other very thin materials.

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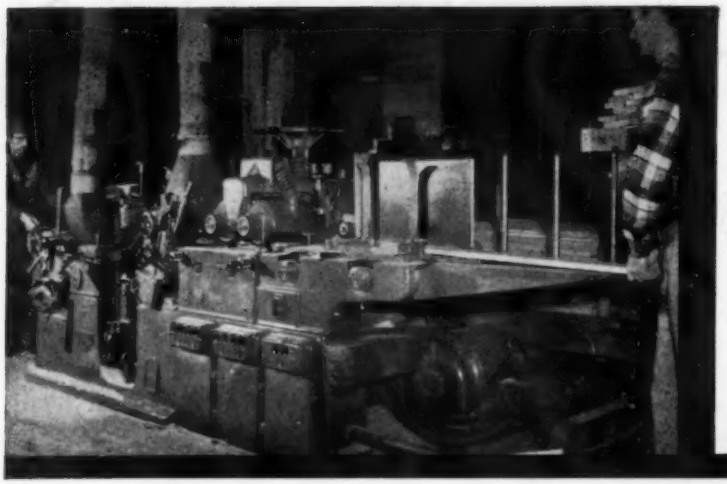

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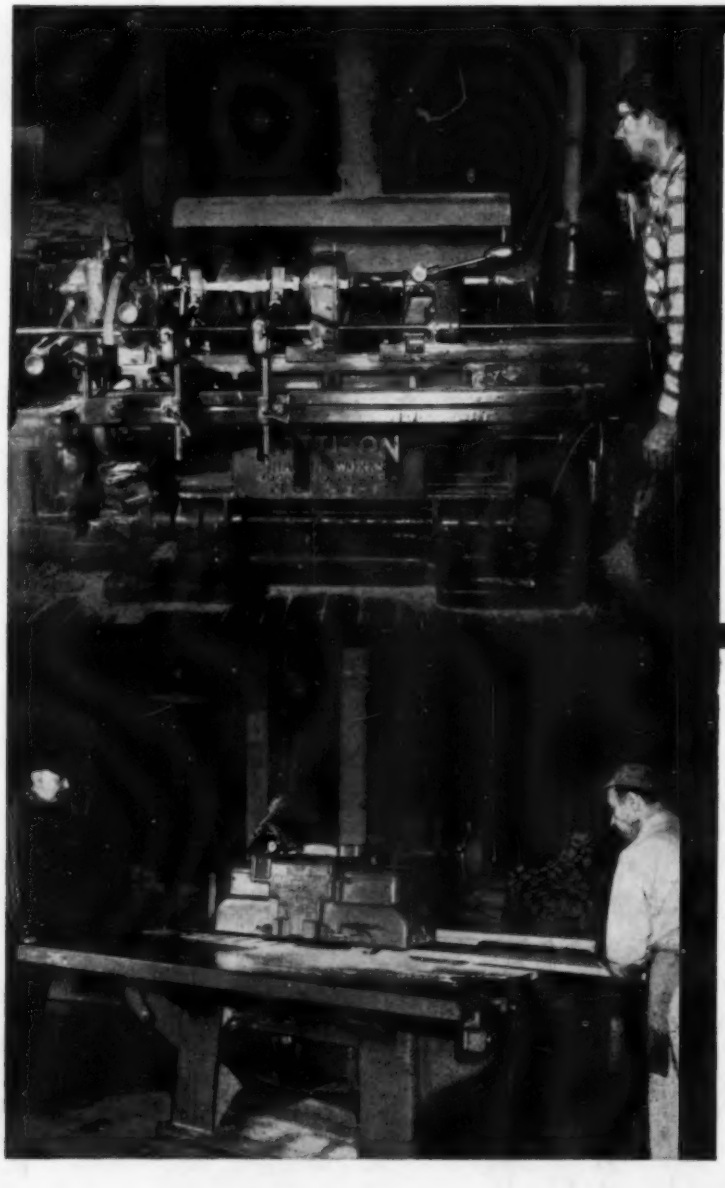
MATTISON RIP SAWS
MOULDERS, and LATHES

to produce quality furniture

INCREASE PRODUCTION 75%, REDUCE SANDING TIME

at Thomas P. Beals Furniture Company, Portland, Maine



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No. 202 Rip Saw ☐; No. 229 Moulder ☐.

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